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The Hunterian Lecture

ON

TUBERCULOSIS OF THE CONJUNCTIVA: ITS ETIOLOGY, PATHOLOGY, AND DIAGNOSIS.

Delivered before the Royal College of Surgeons of England on March 18th, 1912,

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MR. PRESIDENT AND GENTLEMEN,—Tuberculosis of the conjunctiva may be shortly defined as an infective granuloma affecting the conjunctival tissues, whether bulbar or palpebral, due to the local multiplication of bacillus tuberculosis and to the action of the toxins it elaborates. Clinically its manifestations are protean; histologically its basis is the giant cell system, although in some instances the surrounding hyperæmic granulation tissue completely masks the fundamental "tubercle."

From this definition it follows that the presence of the tubercle bacillus is indispensable for the existence of tuberculosis of the conjunctiva, and a diagnosis based upon clinical data only, and not confirmed by the demonstration of the specific micro-organism, must be regarded as entirely foreign to the present thesis, since the clinical appearances may be simulated by conditions due to causes quite other than bacillus tuberculosis; whilst the histological characters, including the giant cell system, may be present in chronic lesions due to the activity of practically any micro-organism.

It is unnecessary, therefore, to do more than refer in passing to phlyctenular conjunctivitis, although owing to its occurrence in individuals of tender years, and of the "strumous" or "scrofulous" type, it has been regarded by many as tuberculous in character. That many of those subject to phlyctenules give evidence of the existence of tuberculous infection in some portion of their tissues is no evidence that the conjunctival lesion is also tuberculous, and until some responsible observer has demonstrated the presence of the tubercle bacillus in an extended series of phlyctenules I see no valid reason for regarding phlyctenular conjunctivitis, *per se*, as a form of tuberculosis of the conjunctiva. I rather regard phlyctenules as an expression of enfeebled vitality and lowered cell resistance in an individual whose ocular system is habitually in a state of irritable tension (for practically every phlyctenule patient suffers from some error of refraction)—a combination which enables any micro-organism to provoke a reaction out of all proportion to its virulence. Similarly the clinical entity designated chalazion cannot be regarded as a form of conjunctival tuberculosis. It is true that Tangl demonstrated tubercle bacilli in tissue, histologically tuberculous in structure, which had been removed from one typical case of chalazion; but this was an isolated instance, and many other equally competent observers have sought in vain to repeat his observation. Despite, however, my disinclination to regard either the phlyctenule or the chalazion as primarily tuberculous, each on occasion may have assigned to it an important rôle in the causation of tuberculosis of the conjunctiva—that of serving as the portal of entry to the tubercle bacillus.

HISTORICAL SUMMARY.

Since the early part of the nineteenth century various observers have recorded inflammatory new formations arising in the conjunctiva, and the descriptions, read in the light of our present-day knowledge, leave but little doubt as to the tuberculous nature of these granulomata. The earliest of these I have been able to trace is not yet a century old—the account by Lawrence (1833) in which he clearly describes[1] the fleshy granulations of tuberculous conjunctivitis so characteristic of the third of Sattler's groups or types. Somewhat later Mackenzie (1854) writes of conjunctival and subconjunctival tumours which he evidently regarded as tuberculous,[2] then nine or ten years elapsed before we find Arlt (1864) writing of lupus of the conjunctiva. Next came a period of inactivity so far as concerns clinical observations, but in this interval laboratory workers were far from idle. First came an exceedingly valuable contribution to the pathology of tuberculosis from Villemin (1865), who demonstrated upon rabbits the infectivity of tuberculous material. Applying this important discovery to his own sphere of research, Langhans (1867) soon demonstrated the experimental production, also in rabbits, of tuberculous infections of the conjunctiva—observations which he embodied in his inaugural dissertation at Marburg—at about the time Virchow was affirming the insusceptibility of the conjunctival membrane to tuberculosis. Now comes the first definite record of a case of tuberculosis of the human conjunctiva, communicated by Koester (1873), followed the next year by Sattler's contribution of a case of tuberculous ulceration of the conjunctiva, and a little later still by similar records by Walb and Hock (1875) respectively, and a further contribution on lupus of the conjunctiva by Alexander (1875).

Case after case was now published in rapid succession, but no good purpose can be served by enumerating them; indeed, they, like those which preceded them, are merely of academic and historic interest, since the diagnosis in every case was based upon clinical and histological evidence only. But in 1882 Koch published his memorable observations upon bacillus tuberculosis, and showed how its presence could be demonstrated in lesions resulting from infection of the tissues by this micro-organism. The importance of this discovery was immediately recognised and promptly applied to the investigation of diseases of the conjunctiva, for in the following year a paper appeared by Pfeiffer (1883) on tubercle bacillus in lupus of the conjunctiva, and two years later one by Ulrich on tuberculous conjunctivitis (1885) detailing the microscopical findings. Mention must also be made of a contribution which appeared by Parinaud (1884) on the diagnostic value of experimental inoculations into the anterior chamber of the rabbit's eye of the infected conjunctival tissue removed from cases of this disease. With these last-mentioned contributions to the subject the diagnosis of tuberculous conjunctivitis may be considered to have been placed upon a sound and scientific basis, and the only further reference of historic interest to which attention must be directed is the masterly paper some seven years latter in which Sattler (1891) for purely clinical purposes classified the various types of the disease according to the naked-eye appearances he had observed.

CASE INCIDENCE.

Figures dealing with the incidence of tuberculosis of the conjunctiva upon the entire population are not, so far as I am aware, available for any town, district, or country, but many ophthalmologists have recorded the total number of new cases that have come under their observation during some specified period, and also the number of cases they have diagnosed as tuberculosis of the conjunctiva, so that a simple calculation enables the ratio existing between the two classes to be determined. The frequency figure thus obtained varies enormously; thus, in round figures, one observer puts it at 1 in 1600, another at 1 in 30,000. I have previously reported frequency figures of 1 in 3000 and 1 in 2700, and have expressed the opinion that probably some cases have been overlooked. Although I see a number of cases of this disease, I am no longer in a position personally to calculate a frequency figure, but during the last five years 31,900 new cases have passed through the ophthalmic department of Guy's Hospital and have yielded ten cases of tuberculosis of the conjunctiva, which gives a figure again of about 1 in 3200, but as many re-admissions are reckoned amongst these "new" cases I am of opinion that my previous figure of

[1] "Sometimes innocent fungous excrescences arise from inflammation affecting the anterior part of the globe, ... a fleshy vascular substance may spring up from the surface of the sclerotic coat."

[2] "I have seen several cases of what seemed to be scrofulous tubercles."

1 : 2700 or even 1 : 2500 is approximately correct. The various recorded figures may be set out as follows :—

1881.	Hirschberg ... 1 : 17,000*	1902.	Stephenson ... 1 : 1500
	Horner ... ... 1 : 4000	1904.	Pegorora ... ... 1 : 13,500
1882.	Milligan ... ... 1 : 20,000		Saemisch ... ... 1 : 1660
1885.	Mules ... ... 1 : 33,000	1906.	Gourfein ... ... 1 : 1630
1889.	Spangenberg ... 1 : 17,000	1908.	Casali... ... ... 1 : 3200
1897.	Eyre... ... ... 1 : 3000	1912.	Ophthalmic Department, Guy's Hospital. 1 : 3200
1898.	Remlinger ... 1 : 1900		
	Bock... ... ... 1 : 10,000		
1900.	Eyre... ... ... 1 : 2700		
	Lagrange and Cabannes ... 1 : 7500		

* Erroneously quoted on previous occasions as 1 : 6000. Hirschberg recorded three cases of *ocular* tuberculosis amongst 17,000 new patients, but of these three cases, one only was of tuberculosis of the conjunctiva.

DIAGNOSIS.

In discussing the diagnosis of tuberculosis of the conjunctiva precisely the same methods are available that would be employed did the infective process occur in any other situation of the body. It will therefore be well to discuss these various methods seriatim under the headings of Clinical Methods and Laboratory Methods. Briefly, they are as follows :—

Clinical methods.—(*a*) Clinical examination of the local lesions presented by the patient ; (*b*) Clinical demonstrations of hypersensibility towards the toxins of bacillus tuberculosis.

Laboratory methods.—(*c*) Microscopical and bacteriological examination of the diseased conjunctiva with a view to the detection of B. tuberculosis. (*d*) Biochemical examination of the patient's blood serum with a view to the detection of specific *antibodies* to bacillus tuberculosis.

CLINICAL METHODS.

(*a*) *Clinical Types and Differential Diagnosis.*

From the point of view of clinical diagnosis cases of tuberculosis of the conjunctiva can often be arranged in one or other of several distinct groups, and recognising this feature Sattler in 1891 summarised the characteristic features of each of several groups. These, with very slight modifications, have formed the basis of the clinical classification which is in use at the present day. It must not be supposed, however, that every case of tuberculosis of the conjunctiva, typical though it may be in appearance, can be referred to any one or other group without some degree of hesitation, since it sometimes happens that two or even three of these clinical types may be noted as present upon different parts of the palpebral or bulbar conjunctiva of the same eye ; but, on the other hand, one or other clinical formation usually preponderates to such an extent as to justify the classification of that case under one particular heading.

The clinical types of tuberculosis of the conjunctiva that are recognised to-day are five in number, and their relative frequency, as instanced in a series of cases that I have analysed for the purpose of this lecture, and in which the diagnosis has been placed beyond a shadow of doubt either by the recognition of the tubercle bacillus or by the positive result of an experimental inoculation, or by both these methods, is shown in the following table :—

Group I.—Ulceration	46
,, II.—Miliary tubercle	25
,, III.—Hypertrophic granulation...	80
,, IV.—Lupus...	46
,, V.—Pedunculated tumour	9

From this it would appear that the type most frequently met with is that classed under Group III., whilst Groups I. and IV are the next most prominently represented types. I fancy, however, that the frequency of the lupus type of tuberculous conjunctivitis is more apparent than real, for, as it occurs in association with lupus of adjacent areas of skin or mucous membrane, it very rarely escapes detection, whilst other types sometimes acquire an incorrect diagnosis.

From a consideration of the cases that have come under my own notice and of recorded cases where descriptive details were available it is almost impossible to avoid the conclusion that the miliary tubercle, as met with in Group II., is the basis of all the clinical types—with perhaps the exception of Group IV. (lupus)—of tuberculosis of the conjunctiva, and that were the cases of any of these groups seen early enough the miliary tubercle would be the only manifestation of the disease. The subsequent differentiation of the primary lesion into the various clinical types is, in all probability, due to variations in the number of the bacilli introduced into the conjunctival tissue, or in the virulence of the virus, or, on the other hand, is an expression of the variation in the relative susceptibilities of the tissue cells of the infected individuals.

Arguing on these lines, I should regard cases of Group I. and III. as indicating the inoculation of distinctly susceptible individuals with numerous virulent bacilli, and cases of Groups II., and particularly V., as instances of infection of resistant individuals with small numbers of attenuated bacilli.

Group I., Tuberculous ulceration.—The symptoms of which the patient complains are often exceedingly slight, even when on examination extensive lesions are noted, but if any considerable induration and œdema of the lids exist there is severe pain ; usually the symptoms consist of some slight photophobia and lacrymation, with little or no pain ; sometimes the only symptom actually complained of is a muco-purulent discharge, which in the morning is found to have gummed the lids together.

The infection is commonly localised to the tarsal conjunctiva or to one or other fornix ; and may involve the caruncle and plica semilunaris. In these situations there is sometimes relatively little inflammatory reaction in the surrounding tissues ; on the other hand, there may be marked induration of the lid tissues, accompanied by hyperæmia and œdema. Less commonly the bulbar conjunctiva is affected, and when such is the case there is practically no inflammatory reaction in the lids, or in the adjacent tunics of the globe, and often, indeed, very little injection of the anterior conjunctival vessels. Ulceration is the chief feature of this group, at first in the form of small miliary ulcers of 1 to 2 millimetres in diameter, the edges sharp, serrated and slightly raised, the base uneven and greyish yellow from the presence of caseous slough. Adjacent ulcers may coalesce, and the extension of the process frequently leads to the formation of ulcers of considerable extent. In the vicinity of the ulcer or ulcers it is not uncommon to find small miliary tubercles, usually minute, sometimes slightly larger, 1 to 2 millimetres in diameter, in which case they resemble the tubercles subsequently to be described under Group II., and these no doubt play an important part in the extension of the process. In certain cases, often characterised by no very lengthy history, an extensive ulceration is found upon examination. In all the cases of this group the preauricular gland is involved. The gland is swollen, hard in the early stages, soon becoming caseous in its centre, and then soft and fluctuating, usually freely moveable over the deeper structures, and in the early stages at any rate not adherent to the skin above. In advanced cases further glands of the lymphatic chain are involved also—the gland at the angle of the jaw, the submaxillary and often the submental glands of the same side. Later still the deeper lying glands situated over the carotid vessels in the anterior triangle of the neck become infiltrated and hard.

The most important variety of conjunctival ulceration other than the tuberculous is the syphilitic. Here the comparatively rapid history, the pain, the brawny œdema of adjacent tissues, the sharp cut edge of the ulcer with its indurated sloughing base, the neighbouring adenitis (of the preauricular and submaxillary glands) are points of diagnostic importance. All, however, sink into insignificance beside the microscopical demonstration of the spirochæta pallida in film preparations of the serum exuding from the ulcer, when Burri's Chinese ink method is employed. Less likely to be mistaken for tuberculous ulcerations are those due to epithelioma and rodent ulcer. The pustules of anthrax and vaccinia are also seen, although but very rarely, infecting the conjunctiva. Here the rapid onset, the clinical course, the history of exposure to infection, the severe malaise and elevation of temperature, assist in the diagnosis of the condition almost as much as the naked-eye appearances of the vesicles or pustules.

Group II., Miliary tubercles.—In this form subjective symptoms are absent, or are reduced to the complaint of trivial discomfort in the form of grit in the eye. Occasionally some lacrymation or dimness of vision, obviously due to lacrymation, is all that prompts the patient to seek advice ; muco-purulent discharge is absent. The lesion is most frequently to be found upon the tarsal conjunctiva, less frequently on the bulbar conjunctiva, and when affecting this position is usually situated close to the corneal limbus on the

equatorial line. Most rarely it occupies a linear position in one or other fornix. Objectively this group is characterised by the presence of greyish or yellowish or greyish-yellow nodules, which very closely resemble trachoma granules when grey, or the tubercles met with in the lungs of acute miliary tuberculosis when yellow is the prevailing tint. They are very frequently arranged in rows or aggregated into small groups. Sometimes they are more widely disseminated, but usually they only affect a small area or a narrow strip of the conjunctiva. They vary from 1 to 3 millimetres in diameter. Beyond slight injection of the neighbouring blood-vessels they cause no inflammatory reaction in the surrounding structures, and for a time at any rate they show but little inclination to undergo necrotic disintegration. Later the cornea may become involved and show a certain amount of pannus, in which are set small greyish-red nodules. These sometimes undergo necrosis, and give rise to definite ulceration of the cornea. The preauricular gland on the affected side is usually, but not invariably, involved.

The differential diagnosis here may have to be very carefully considered, as between tuberculosis and early trachoma, simple granular (follicular) conjunctivitis, ophthalmia nodosa, and Parinaud's conjunctivitis when affecting the palpebral conjunctiva, vernal catarrh and phlyctenular conjunctivitis when involving the bulbar conjunctiva, to say nothing of the small beginnings of lipoma, adenoma, and simple, parasitic and dermoid cysts. Leprosy may also involve the conjunctiva, when it is usually of the nodular type and extends to the tarsal conjunctiva from adjacent nodules on the skin surface. Glanders, too, may affect the conjunctiva, and may be suspiciously like the tubercles I have described. Usually, however, the lesion is in the form of a small umbilicated vesicle, containing purulent material. It is a condition that I have seen once only, and then similar vesicles were present on other parts of the body and were associated with small subcutaneous glanders nodules.

Group III., Hypertrophic granulations.—In this and the following group the subjective symptoms are in general more marked than in the other three. Pain, photophobia, lacrymation, swollen œdematous eyelids, muco-purulent discharge, enlarged preauricular and submaxillary glands, are all symptoms of which the patient complains. The lids externally are seen to be swollen, thickened, hyperæmic, in some instances to such an extent as to suggest a mild attack of erysipelas. The tarsal conjunctiva and the fornix, usually both superior and inferior, are alike infected. Massive red hypertrophied papillæ, scattered over the tarsal conjunctiva, together with rounded button-like or flattened mushroom-shaped masses of granulation tissue, sometimes derived from the tarsal conjunctiva but usually springing from one or other fornix, characterise this form of conjunctivitis. (Many of these granulation masses, especially those springing from the fornices, are exceedingly irregular in outline, of a deep red colour, and bear a very close resemblance to the comb of the fowl; and it is a matter for some regret that the term "cockscomb excrescence" should have been used, by myself in common with others, in the description of appearances presented by Group IV., as the typical cockscomb excrescence is much more characteristic of Group III. than of Group IV.) On the tarsal conjunctiva between the hypertrophied papillæ may be seen areas that, beyond being of a livid purple-red hue, have not undergone any obvious naked-eye change. Here and there many of the masses of granulation tissue have undergone superficial necrosis, and thus present faceted ulcers covered with caseous material. Small circumscribed abscesses may be present. Here and there deposits of tubercles resembling those described in Group II. are to be seen, generally situated on the boundaries of the portions of comparatively normal conjunctival tissue. The bulbar conjunctiva almost invariably remains clear and unaffected, when remarkably little injection of the anterior conjunctival vessels is to be seen. The cornea in the early stages remains clear also, and this is the more astonishing in that owing to the œdema of the lids and the presence of the protuberant granulation a certain amount of ptosis is always present, so that the cornea is for the most part in contact with a highly infective granuloma. Cases comprised under Group III. have often in the past gone on for many years, and yet only in the very late stages have I noticed a slight amount of pannus, and even then no ulceration was to be made out.

Cases of this group may have to be distinguished from well-established trachoma, adenoma (lymphoma), simple granulation tumour, angioma and malignant tumour, and very rarely can the diagnosis be made with certainty in the absence of bacteriological examination.

Group IV., Lupus.—Group IV. comprises those cases of tuberculosis of the conjunctiva which are simply extensions of true lupus from the adjacent areas of skin or mucous membrane. The appearances are those presented by lupus when it affects any mucous membrane, modified to a very slight extent by reason of the anatomical relations of the conjunctiva. In other words, the appearances presented are those of jelly-like masses, sometimes pale and greyish in colour, resembling nothing so much as frog's spawn, at other times deep crimson, and in no way differing from the red currant jelly masses found on skin surfaces. Occasionally the masses, particularly where they are springing from the fornix and are compressed between the lid and the globe, become flattened and sometimes pedunculated. Such excrescences, subjected as they are to intermittent pressure, usually exhibit more or less extensive ulceration, and acquire an irregular margin which explains the term "cockscomb excrescences" as applied to these structures to which I have already taken exception. Wherever ulceration occurs the ulcer is marked by a very steep, uneven margin, and bleeds very readily.

The diagnosis of cases falling in this group usually presents no difficulties whatever. The existence of lupus at the adjacent skin or mucous surfaces, and usually the clear evidence of the direct extension of the process on to the conjunctiva, renders no doubt possible. At the same time the possible co-existence with facial lupus of lesions other than tuberculous, such as those mentioned in connexion with the differential diagnosis under Group III., must not be lost sight of.

Group V., Pedunculated tumour.—This group comprises those cases which are characterised by pedunculated polypoid tumours, springing either from the conjunctiva of one or other lid or from the conjunctiva investing the globe. They are usually associated with no subjective symptoms other than those which arise from the extrusion of the mass from the palpebral cleft, and the certain amount of lacrymation which may result from the presence of a loose mass between the globe and the lids. The preauricular gland is not enlarged. Muco-purulent discharge is absent.

The clinical naked-eye examination absolutely fails to differentiate this form of tuberculosis of the conjunctiva from papilloma or fibroma, and one can safely say that the diagnosis can never be made with certainty in the absence of bacteriological investigation. True polypi, papillomata, and fibromata occur in the conjunctiva, as does also the granulation tumour, so frequently pedunculated, which sometimes accompanies the healing of various wounds or injuries or of ruptured chalazion, or forms around foreign bodies. On the other hand, in none of the cases I have seen did the tuberculous tumour present any special character which would of itself raise any suspicion of tuberculous infection. In the first of these forms of tuberculous conjunctivitis that came under my notice search for the tubercle bacillus was undertaken simply on account of the recurrence of the tumour after excision. The detection of bacillus tuberculosis and consequent appreciation of the real etiological significance of this pedunculated tumour resulted in the systematic examination of all other similar tumours subsequently encountered, with the result that out of a total of 11 pedunculated conjunctival tumours the tubercle bacillus has been demonstrated in four.

(*b*) *Clinical Demonstration of Hypersensibility towards the Toxins of Bacillus Tuberculosis.*

In the individual suffering from tuberculous infection, whether localised or general, the phenomena of hypersensibility can readily be demonstrated by various clinical tests—known best by the names of their introducers or advocators. They all depend upon the introduction into that individual of the extracellular toxins of B. tuberculosis, either through the skin by various methods or through the uninjured normal conjunctiva.

For the first of these methods the original Old Tuberculin (Koch) is employed. This was first introduced in 1890 and is a clear brown aromatic-smelling fluid, prepared from a culture of B. tuberculosis grown for some 6 to 12 weeks in

glycerin-veal broth, by evaporating it to one-tenth of its bulk and then filtering through porous porcelain. It is practically a glycerin solution of the extracellular toxins produced by the tubercle bacillus and for use is diluted with a 25 per cent. solution of glycerin.

For the last of these tests Old Tuberculin freed from Glycerin (Calmette) is utilised. This is prepared by treating Old Tuberculin with alcohol; the resulting precipitate is dried, dissolved in distilled water, again precipitated with alcohol, washed and dried. Before use it is dissolved in sterilised distilled water.

1. *Cutaneous reaction* (*von Pirquet*).—Three minute punctures are made through the epidermis, usually of the arm, in the form of a triangle with its apex upwards, by means of a small toothed lancet. The puncture at the apex is made directly on the skin. The other two, which mark the angles of the base of the triangle, are marked out each by a drop of 25 per cent. solution of old tuberculin and the puncture made through the drops. A positive reaction consists in the production at the end of 24 hours of a small hyperæmic area, which later becomes a definite papule, surrounded sometimes by a distinct aureola of inflammatory reaction. The papule may or may not become pigmented.

2. *The dermal reaction* (Lignières, Lautier, Woodcock, or Moro).—Several modifications of this reaction are in vogue. Lignières and Lautier are in the habit of shaving off the epidermis from an area 1–2 square centimetres, so as to leave the dermis bare. Woodcock attains the same end by the use of a small blister plaster, 1 or 2 centimetres square. In either case a small quantity of 25 per cent. solution of old tuberculin is rubbed on to the denuded surface and allowed to dry. The inoculated spot is then covered with a small piece of protective gauze. A control area, not treated with tuberculin, is previously prepared at some little distance from the first. In Moro's modification old tuberculin is incorporated with an equal bulk of lanolin, and is thoroughly rubbed into the skin over an area of 1–2 cm., preferably with the aid of a small glass rubber or spreader. Whichever of these methods is employed, the positive reaction is shown after an interval of from 48 hours to three days by the appearance of œdema and hyperæmia over the area treated with tuberculin; frequently a number of small papules make their appearance a little later, and may last for some days.

3. *The intradermal reaction* (Mantoux) is carried out by injecting into the substance of the skin itself about 0·05 c.c. (one drop) of a 1 in 5000 solution of glycerin-free (Calmette's) old tuberculin. Care must be taken that the injection is not made into the subcutaneous cellular tissue. A positive reaction is shown by the appearance within 24 hours of pink or bright red œdematous infiltration over the site of injection, with induration upon the surface, surrounded by a more or less extensive zone of erythema, very similar in appearance to an ordinary urticarial wheal.

Either of these tests applied to a patient suffering from tuberculous conjunctivitis would give rise to a positive reaction, but in interpreting the result two points must be borne in mind. The first is that a very large proportion of apparently healthy and normal individuals will yield positive reactions to these tests, thus supporting the view that a high percentage of the community at large is, or has been, the subject of tuberculous infection. I say *has been* advisedly, for the reason that many cases that gave cutaneous reactions during life when examined post mortem have showed no obvious tuberculous lesion or have given proof of past infection only (e.g., calcareous nodules in glands, &c.), but no evidence of present tuberculosis. So that I have come to regard a positive reaction to these tests when occurring in an individual more than one or two years old as quite useless for purposes of diagnosis. On the other hand, a negative result to any of these tests, especially if the same result is obtained on a repetition of the test a fortnight later, possesses, in my opinion, considerable value, as indicating that the tested individual has hitherto escaped tuberculous infection. The second point is that none of the cutaneous tests can do more than indicate the presence of a tuberculous focus somewhere and in some tissue, they cannot determine the site of the lesion. A patient presenting extensive conjunctival ulceration might quite well give a positive reaction by reason of the existence of a tuberculous focus in a mesenteric gland.

4. *Subcutaneous test* (Koch).—In this test 0·001 c.c. of old tuberculin is injected hypodermically into any subcutaneous area. A positive reaction is indicated by the temperature commencing to rise some four or five hours after the injection, reaching a maximum in about 12 hours, and then gradually returning to its original level. A small localised indurated area at the site of inoculation may also be observed during the persistence of the pyrexia. This test obviously can only be employed in patients whose temperature variations are small, the existence, for example, of evening pyrexia being a strong contra-indication to its use. According to Koch, the rise of temperature following the inoculation to be of diagnostic value should not be less than a couple of degrees Fahrenheit. If, however, there is a slight rise of temperature—too slight to be of value as a diagnostic point—the inoculation should be repeated, employing the same dose, two days later. The second injection in the tuberculous individual will be followed by a pronounced rise, thus settling the point as to the positive reaction. If no temperature reaction, however slight, is observed the injection of a dose of tuberculin five times as large as the primary one, two days after that date, will give a distinct temperature reaction with a tuberculous individual, but will have no effect upon a normal individual.

The first objection I raised to the cutaneous tests may in some cases be urged in connexion with this subcutaneous test; but in the case of the individual suspected to be suffering from tuberculous conjunctivitis we have an obvious open lesion which can be critically observed, and the subcutaneous test, when positive, will, in addition to providing a temperature reaction, also produce very marked hyperæmia and tissue changes in the pre-existing tuberculous lesion; so that while the temperature reaction informs us that the individual is or has been tuberculous, the inflammatory reaction noted in the conjunctival lesion gives us the further information that that is the seat of the tuberculous focus. There is, however, a very valid objection to be raised to the employment of this test. The local reaction in the conjunctiva is by no means free from danger, but may be followed by a rapid and serious extension of the disease. Hence this test is also contra-indicated.

5. *Ophthalmo-test* (Calmette).—In this test, if one or two drops of a 1 per cent. solution of Calmette's glycerin-free old tuberculin be dropped into the normal conjunctival sac of a tuberculous individual, in the course of 24 hours a distinct inflammatory reaction is observed in the conjunctiva, characterised by hyperæmia of the caruncle and plica semilunaris, injection of the conjunctival vessels, and lacrymation, which may increase in severity and give rise to the discharge of a muco-purulent secretion. This test, in my opinion, is the most valuable indication of the presence of an *active* tuberculous focus that we possess, so that it is a test I frequently employ to determine whether a tuberculous individual under treatment with tuberculin is or is not cured, discontinuing the injections only when a negative result is obtained. If both eyes are affected of course this test cannot be employed, as tuberculin should never be applied to an eye which is not to all appearance absolutely normal, nor, indeed, is it always suitable for employment in connexion with the diagnosis of lesions of the conjunctiva, since as with the subcutaneous test an inflammatory reaction may take place in the affected eye and give rise to serious trouble.

From the foregoing remarks it will be seen that of the various tests depending upon hypersensibility to tubercle toxin which may be employed for the diagnosis of localised tuberculosis in other situations of the body none are really suitable for our present particular purpose.

Results of Treatment.

We have in addition to the above methods of diagnosis one further clinical method to which reference may be made—I mean the results of treatment. If we assume that an individual presenting definite lesions is infected with B. tuberculosis, and treatment specifically directed towards the production of immunity towards the tubercle bacillus results in the disappearance of the lesion and the return of the individual to normal health, there is strong presumptive evidence that the lesion was due to infection with B. tuberculosis. In illustration of this point I may quote a case of scleritis recently transferred to me by one of my colleagues in which clinically the diagnosis between syphilitic and tuberculous infection remained in doubt. Wassermann's reaction gave a completely negative result. Von Pirquet's cutaneous reaction was positive. Calmette's ophthalmo-reaction applied to the sound eye was also positive. A series

of opsonic indices indicated a tuberculous focus in the eye. It seemed justifiable therefore to assume that the case was one of tuberculous scleritis, and I presume that in earlier days the eye would have been excised, and in all probability the diagnosis completely settled, either by the detection of the tubercle bacilli in the infected tissues, or by the result of inoculation experiment. In this case tuberculin treatment was decided upon and resulted in the return of the eye to an absolutely normal condition in six months, thus confirming the original diagnosis.

LABORATORY METHODS.

(*c*) *Microscopical and Bacteriological Examination of the Local Lesions with a View to the Detection of Bacillus Tuberculosis.*

This method usually necessitates the excision of a portion or portions of the diseased conjunctiva under strictly aseptic precautions. In the case of Group I. excision is not absolutely essential from the point of view of diagnosis, since a gentle curetting will usually afford ample material for examination, but as excision is a recognised mode of treatment, the ulcer if small, should be entirely removed, together with any adjacent nodules. In some instances where the disease has progressed far, and the whole of the lid is infiltrated, a complete excision is well-nigh impossible, but even here a portion of diseased conjunctiva may well be removed, as undoubtedly the subsequent healing process will thereby be accelerated. The tissue removed should be received into a small sterilised glass capsule or sterilised test-tube containing a small quantity of normal saline solution warmed to 37° C., and at once conveyed to the laboratory and there divided into three portions.

1. One piece of tissue should be crushed in a sterilised glass or agate mortar, together with a small quantity of normal saline solution, and the resulting emulsion employed in the preparation of films. These should be stained by Ziehl-Neelsen's method and examined microscopically. Frequently the diagnosis can be confirmed by the detection of the tubercle bacillus within a very short time of removal of the tissue from the affected eye. If careful search of the film preparations fails to show the presence of tubercle bacilli, the remainder of the emulsion should be treated by the antiformin method. The emulsion should be added to a few cubic centimetres of antiformin[3] in a small test tube or capsule and placed in the hot incubator at 37° C. for about a couple of hours. At the end of this time the tissue will be found to be completely disintegrated, and the turbid fluid may now be centrifugalised thoroughly and the deposit used to make film preparations on albuminised slides, and stained by Ziehl-Neelsen's method. Frequently this plan will enable tubercle bacilli to be found where previously they were regarded as absent, and owing to the fact that antiformin used in this way destroys practically all bacteria except B. tuberculosis, this plan should be adopted if it is intended to attempt to cultivate the organism directly from the tissue—in which case the remainder of the deposit should be planted on to Dorset's egg medium in tubes.

2. The second portion of tissue should be hardened and embedded in paraffin preparatory to sectioning. The fixing reagent that is employed is a matter of little moment. Alcohol, perchloride of mercury, or formalin gives equally good results. I cannot, however, recommend the use of Müller's fluid. The sections should be cut as thin as possible and stained by Ziehl-Neelsen's method, and it will be found that aniline hydrochloride is a better decolourising reagent for sections than sulphuric or nitric acid. The preliminary staining with fuchsin and the subsequent decolourisation should be very carefully and thoroughly carried out, since in many cases the bacilli are not easily found. Other sections should be stained with hæmotoxylin and eosin in order to make out the general histological structure.

The results of the microscopical examination corresponding to each of the clinical groups may now be summarised.

Group I.—Microscopically scrapings from ulcers such as those already described show a considerable amount of caseous material mingled with numbers of small circular polynucleated granulation cells, and occasionally giant cells and epithelioid cells, amongst which may be found acid-fast bacilli, indistinguishable morphologically and tinctorially from the tubercle bacillus. These bacilli are often to be found in small bunches, and may be present in considerable numbers. Occasionally they are widely scattered throughout the films, and then occur either singly or in pairs. Microscopical examination of tissues in the immediate neighbourhood of the ulcers shows that, as in other forms of tuberculosis, the giant cell system is the fundamental basis of the tissue changes. Typical Langhans cells are to be found, although their numbers may be small, since the tissue contents comprise a very highly vascularised granuloma, rich in small round cells. Here and there masses with central caseation are to be observed, and it is at the periphery of these caseous areas that the tubercle bacilli are most readily found.

Group II.—Microscopically sections of the tubercles show very numerous and very well-defined giant cell systems, held together by connective tissue and surrounded by a minimal amount of small cell infiltration. Tubercle bacilli are scattered here and there, usually singly or in pairs, very rarely in bunches or groups, throughout the tissue, without holding any particular relationship to the central giant cells in the giant cell system. In numbers they are sparse, and very frequently a prolonged search is necessary in order to demonstrate their presence.

I have previously expressed the opinion that this group is but the initial stage of Group III. The small tubercles increasing in size by the proliferation of the small round-celled exudation which encircles the giant cell systems, in response to the irritating stimulus provided by the toxin of the tubercle bacillus, result in the fungating granulation so characteristic of Group III. or the papillary outgrowth of Group V.; alternatively, as I have also suggested, under circumstances indicating further differences in the relative activities of seed and soil, these tubercles may undergo necrotic degeneration and give rise to the miliary ulcers of Group I.

Group III.—Microscopical examination of sections of the tissues shows occasionally round and polygonal cells, but the bulk of the tissue is made up of small round cells held together by a scanty reticulum of connective tissue. Typical giant cell systems are conspicuous by their absence. Caseous areas are hardly ever seen, and tubercle bacilli, almost always single, are present in small numbers, and can only be found after very prolonged search. In two instances I have been able to detect tubercle bacilli in the muco-purulent discharge from cases of this group.

Group IV.—Microscopically the granulations consist of masses of small round cells like lupus elsewhere, which show in addition a large proportion of newly formed blood-vessels of the embryonic type. Here, again, tubercle bacilli are difficult to demonstrate. They are few in number, and so scattered through the granulation tissue that it requires considerable search before they can be found.

Group V.—Microscopically a layer of flattened epithelial cells, usually only two or three cells thick, is seen enveloping the tumour. The tumour itself generally consists of a stroma of fairly dense connective tissue, enclosing a mass of round cells, with here and there giant cell systems, well defined, and typical in appearance. In close proximity to the giant cell systems tubercle bacilli can be found in fairly large numbers, arranged in bunches or occasionally as isolated individuals.

3. *Experimental inoculation.*—The third portion of tissue should be used for animal inoculation. The animals selected for the purpose are the rabbit and the guinea-pig, the seat of inoculation being the subcutaneous tissue of the groin in the case of the latter animal, and the anterior chamber of the eye in the former.

Of the two animals, the guinea-pig is generally considered to be the more susceptible to the tubercle bacillus, a successful infection resulting in death from general tuberculosis some six, eight, or ten weeks after inoculation. On the other hand, if tuberculous material be introduced into the anterior chamber of a rabbit's eye, an iritis which is almost pathognomonic follows in from 14 days to a month. The wide time limits given for the onset of iritis or the death of the guinea-pig from general tuberculosis depend upon two factors—the one, the virulence of the B. tuberculosis, the other the number of organisms introduced. In this connection I may mention the experiments of Wyssokowitsch, who (using tuberculous sputum) found that the fewer the organisms inoculated into the guinea-pig the longer the course of the disease before it was terminated by death, and also that if too few (less than 150) tubercle bacilli were inoculated into the rabbit tuberculosis was not set up. This point was also insisted upon by Koch in discussing the results which followed intra-ocular inoculation in the rabbit of varying quantities of culture material. Theobald Smith recorded a few definite experiments upon this point; for example, an emulsion of a culture of the bovine bacillus was injected intravenously into a rabbit in a dose of 0·5 c.c. The remainder of the emulsion was diluted ten times, and another rabbit was inoculated with 0·5 c.c. of this dilution. The first rabbit succumbed to general tuberculosis in 26 days; the second did not die until 38 days after inoculation.

Now as the course and progress of a case of tuberculosis of the conjunctiva usually point to a strain of the tubercle bacillus of low virulence, and as one knows from microscopical examination of material from such cases that the bacilli are none too numerous, it follows that as large a piece as possible of the diseased conjunctiva should be used for inoculation purposes.

(*d*) *Biochemical Examination of the Patient's Blood Serum with a View to the Detection of Specific Antibodies.*

The examination of the patient by serological methods

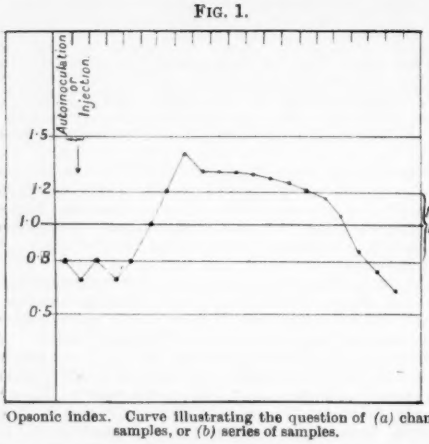
[3] Equal parts of 16 per cent. solution NaOH and "Eau de Javelle."

very frequently gives considerable assistance in diagnosis and treatment. The specific antibodies to bacillus tuberculosis which are generally the objects of search in these investigations are (1) agglutinins; (2) in general such specific antibodies as are capable of fixing complement; and (3) opsonins.

Agglutinins and complement fixing antibodies I do not propose to deal with in detail, as I do not consider either the sedimentation or the Bordet-Gengou reactions as applied to the bacillus tuberculosis sufficiently accurate or consistent to be of value in diagnosis—although both tests have their importance in regard to treatment. Opsonins, however, occupy a different position, and it will be well to present some of the special points in connexion with tuberculous conjunctivitis.

The diagnosis of tuberculous infection can be carried out by applying the method for the estimation of the opsonic index to (*a*) chance samples and (*b*) series of samples. To deal with the examination of chance samples first. Without in any way attempting to discuss the evidence for and against the intrinsic value of the opsonic index, it may be taken, I think, as fairly well established that the opsonic index in the hands of a skilled observer does afford some information as to the progress and course of the process of immunisation towards any given disease. Further, that the natural course of any infection is rather in the direction of cure, and during that progress certain definite movements of the opsonic index occur which are spoken of collectively as the opsonic cycle. Referring for a moment to Fig. 1, it

FIG. 1.



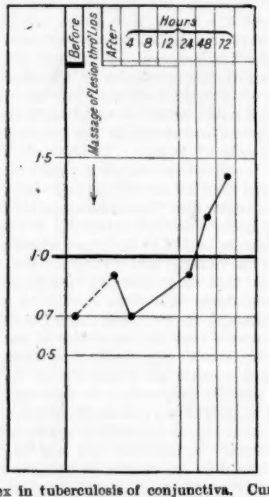
Opsonic index. Curve illustrating the question of (*a*) chance samples, or (*b*) series of samples.

will be seen that a chance sample might be taken from the patient at a moment when the index was at any one of the points indicated in the curve. The result of the examination of a chance sample of blood of a patient suspected to be suffering from tuberculosis of the conjunctiva may result then in an index to the tubercle bacillus which is either normal or considerably below or considerably above the normal line. In the first two instances the information obtained is of very little value. An exceedingly low index may mean either actual infection by the tubercle bacillus or merely susceptibility to infection by that organism. In the first case, the examination of another sample of blood may show movement of the index either to or above the normal, in which case we should be justified in assuming that infection had already taken place, but in the second instance another low index would still leave us in doubt, and further samples would be needed before a definite opinion could be arrived at. Similarly, in the case of the normal index further samples would be required in order to determine whether the index remained on the normal line, in which case we should decide that the patient was not infected with the tubercle bacillus, or whether movements well above or below normal were obtained, in which case we should infer that infection had taken place.

An index considerably above the normal indicates with certainty the existence of a tuberculous focus (for Nature does not elaborate an excess of specific antibody, save in the attempt to overcome a definite infection).

It will, therefore, be seen that only under the most favourable circumstances can one hope to get definite and positive information as to whether the patient is or is not infected with bacillus tuberculosis from the examination of a chance sample, and that usually it is necessary to examine two or more samples of blood. It is preferable, therefore, to arrange to examine a series of samples in the first instance, and this plan has a further advantage. Under ordinary circumstances neither the chance samples nor the series of samples give any indication as to the site of the lesion. They merely indicate the existence of a tuberculous focus, but if during the collection of the samples comprising our series we attempt to provoke an auto-inoculation, the information we shall obtain will not only tell us whether the patient is infected with bacillus tuberculosis, but if the question is answered in the affirmative will also tell us that the lesion from which we arranged the auto-inoculation should take place is the infective focus. In tuberculosis of the conjunctiva it is no difficult matter to arrange that the auto-inoculation shall take place from the conjunctival lesions, since it is quite an easy matter to massage ulcers, tuberculous granulations, or polypi with the thumb or finger *through the closed lids* without causing any direct mechanical injury or producing any subjective sense of discomfort. The investigation should be carried out somewhat in this fashion. A sample of blood is taken from the lobe of the ear or from the patient's finger. Next the lids of the affected eye are kneaded between the two thumbs and moved over the globe for some three or four minutes. Half an hour later a second sample of blood is taken from the peripheral circulation. Three hours later, and 24 hours later, and perhaps three days later, further samples are taken. Should our clinical diagnosis be correct, and the patient be suffering from tuberculosis of the conjunctiva, a series of indices giving a curve somewhat resembling that shown in Fig. 2 will be obtained. Operative procedure upon

FIG. 2.



Opsonic index in tuberculosis of conjunctiva. Curve showing effects of massage of eyelids.

the diseased conjunctiva will also provoke auto-inoculation, and specimens of blood taken before, soon after, and some 24 hours after curetting or the excision of a portion of the infected conjunctiva will usually give precisely similar information as in Fig. 3.

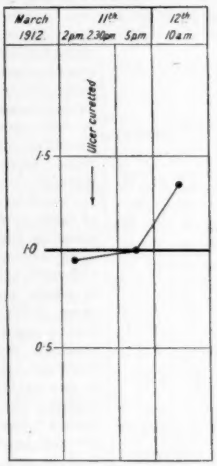
ETIOLOGY.

A. *Predisposing Causes.*

In many infective diseases a careful consideration of the causes which may possibly influence infection such, for example, as sex, age, &c., will afford valuable information, but in the case of tuberculosis of the conjunctiva the only feature which stands out with any degree of prominence is that the disease affects individuals chiefly during the early years of life. In this respect, however, it differs in no wise from tuberculosis in other situations. Whilst investigating these predisposing causes the literature has been carefully

searched for details of recorded cases, and in order to be consistent no case has been included in which the diagnosis was lacking in the essential point—namely, the demonstration of the presence of bacillus tuberculosis. This means, of course, that no cases prior to the discovery of the tubercle bacillus in 1882 have been included, but even in those recorded since that date it is a striking fact that precise details are lacking in a considerable number. In all I have analysed nearly 400 recorded cases, and from these I have been able to select less than 200. Unfortunately, in some of these, although the report is full and accurate in many respects, such details as the age or sex of the infected individual, and even the eye affected, have been omitted. To these cases I have added those which have come under my own observation, and which now number 29 (omitting one recent case in which the diagnosis was not substantiated by the demonstration of the specific bacillus, as this could only have been done by sacrificing the eye—which under treatment with tuberculin has been saved and retains normal vision). By doing this a total of 206 authentic cases has been rendered available for analysis.

FIG. 3.



Opsonic index. Effects of curetting conjunctival ulcer.

The chief points in the histories of my own cases are here summarised in tabular form (Table I.), and I take the opportunity of expressing my thanks to my colleagues at Guy's, Dr. H. L. Eason and Mr. A. W. Ormond, for the cases they have sent on to me.

Sex.—From the analysis of these cases (Table II.) it would appear that sex has but little influence upon the etiology of tuberculous conjunctivitis. Females, however, preponderate, since there are 112 females and 88 males; in the remaining six instances either the sex or age of the patient—or both—is missing from the author's account of the case; so that if these six cases are disregarded we find 44 per cent. of the patients were males and 56 per cent. females. In 1897 I expressed the opinion that the ratio was about 1·5 females: 1 male, but the present investigation shows a ratio of only 1·27: 1, and I take it merely expresses the fact that there are slightly more female conjunctivæ available for infection during the age period of greatest incidence.

Age.—The age limits within which cases of tuberculosis of the conjunctiva occur are extremely wide. No less than four

TABLE I.—*Giving Details of 29 Cases of Tuberculosis of the Conjunctiva.*

Group.	No.	Sex.	Age.	Tuberculosis history, family or personal.	Eye affected.	Situation of lesion.	Glands involved.	Tubercle bacillus in lesion.	Inoculation experiment.	Treatment.	Result.
I.	1*	M.	5/12	—	Right.	Palpebra inferior.	Preauricular.	+	+	Operation.	Cured.
	2*	M.	7½	—	,,	Bulbar.	,,	+	0	,,	,,
	3	F.	3 5/12	—	,,	Palpebra superior.	,,	+	+	T.R. 14 months.	Cured. Tuberculous skin lesion later.
	4	M.	6	—	,,	Palpebra superior + inferior + bulbar.	Preauricular + submaxillary.	+	+	T.R. 2 months.	Improving rapidly.
II.	5*	M.	20	—	,,	Palpebra inferior.	Preauricular.	+	0	Operation.	Cured.
	6*	M.	1 5/12	—	,,	Palpebra superior.	,,	+	0	,,	,,
	7	M.	5	—	,,	,,	,,	+	+	,,	,,
	8	F.	5/12	—	,,	Palpebra superior + inferior.	,,	+	+	T.R. 12 months.	,,
	9	F.	7	Family.	,,	Palpebra superior.	,,	+	+	Operation.	,,
	10	F.	27	—	Left.	Bulbar.	,,		+	T.R.	?
	11	F.	20	Family.	,,	,,	,,	−	+	T.R. 4 months.	Cured.
III.	12*	F.	23	Personal.	Both.	Palpebra superior + inferior.	,,	+	+	Operation.	No improvement.
	13*	F.	23	,,	Right.	Palpebra inferior.	,,	0	+	,,	Improved.
	14†	M.	18	—	,,	Palpebra superior + inferior.	Preauricular + submaxillary.	+	+	,,	Cured.
	15†	M.	14	—	Left.	,,	Preauricular.	+	+	,,	Improved.
	16‡	F.	9	Family.	,,	Palpebra superior.	,,	+	+	T.R. 12 months.	Cured.
	17	M.	13	—	,,	Palpebra superior + inferior.	Preauricular + submaxillary.	+	0	T.R. 13 months.	,,
	18	F.	15	—	Right.	Palpebra superior.	Preauricular.	+	+	Operation.	,,
	19	F.	19	—	Left.	Palpebra superior + inferior.	,,	+	+	,,	No improvement.
	20	M.	15	—	Right.	,,	,,	+	+	T.R. 6 months.	Cured.
	21	M.	12	—	Left.	,,	,,	0	+	,,	,,
	22	M.	14	—	,,	,,	,,	+	+	Operation.	Recurred. Died 2 years later from general miliary tuberculosis.
IV.	23*	M.	15	Personal.	,,	Palpebra inferior.	,,	+	0	,,	Recurred.
	24	M.	49	,,	,,	Bulbar.	*Nil.*		0	T.R. 4 months.	Much improved.
	25	F.	14	,,	Right.	Palpebra superior + inferior + bulbar.	Preauricular.	+	0	T.R. 7 months. Operation.	No improvement. Improved.
V.	26*	F.	28	—	,,	Palpebra inferior.	,,		+	Operation.	Cured.
	27*	F.	9	Family.	Left.	,,	,,	+	0	,,	No local recurrence, but right apical phthisis twelve months later.
	28	F.	5 5/12	—	Right.	Palpebra superior.	,,	−	+	,,	Cured.
	29	F.	8	—	,,	Palpebra inferior.	*Nil.*	−	+	,,	,,

* Recorded 1897. † Recorded 1900. ‡ Recorded 190

patients in this series were under 12 months—namely, one recorded here by myself at six months, one by Del Monte at eight months, others by Ulrich and myself at 10 months. At the other extreme are cases by Terson, 71, and Hochheim,

TABLE II.—*Analysis of 206 Authentic Cases, showing Age, Sex, and Clinical Grouping.*

Age.	Group I.		Group II.		Group III.		Group IV.		Group V.		Totals.	
	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.
0–10 years	11	11	5	6	8	11	1	—	1	3	26	31
11–20 ,, ...	2	10	4	4	17	16	9	16	1	2	33	48
21–30 ,, ...	1	3	1	3	5	7	3	7	—	1	10	21
31–40 ,, ...	3	1	1	—	3	3	—	3	—	—	7	7
41–50 ,, ...	1	1	—	—	—	1	3	1	—	—	4	3
51–60 ,, ...	0	1	—	—	2	—	1	—	—	—	3	1
61–80 ,, ...	1	0	—	—	4	—	—	1	—	—	5	1
Age or sex (or both) unspecified ...	(0)		(1)		(3)		(1)		(1)		(6)	
Totals	19	27	11	13	39	38	17	28	2	6	88	112*

* 200 + (6).

76 years. Still, just as in other localised forms of tuberculosis, its onset is usually during childhood and early adult life, 57 cases occurring during the first ten-year period and 81 during the second, and is most marked at or about puberty.

Eye affected.—In this series of 206 cases the eye which was the seat of the lesion is not recorded in 24 instances; of the remaining 182 the right eye was the affected one in 44·5 per cent. and the left in 43·4 per cent., so that neither eye can be said to be more frequently attacked than its fellow, since the figures are practically equal. It is exceedingly uncommon for both eyes to be affected; only 22 such cases have been recorded, or 12·1 per cent. of the series, as against 87·9 per cent. where one eye only suffered.

Right eye	81
Left eye	79
Both eyes	22
Not specified...	24
	206

Situation of the lesion.—In 7 cases the seat of the lesion is not specified. The situation of the lesion in the remainder is as follows:—

Conjunctiva of upper lid...	62
,, lower lid	30
,, both lids...	59
Bulbar conjunctiva	31
,, ,, and both lids	12
,, ,, ,, lower lid	4
,, ,, ,, upper lid	1
Not specified	7
	206

It would therefore appear that the conjunctiva of the upper lid—the favourite spot for the lodgment of a foreign body be it noted—was that most frequently selected for attack by the bacillus tuberculosis. Next in order of frequency both lids were involved when the patient first came under observation, and it is only fair, I think, to assume that one lid was infected at a date prior to the other, and probably the ratio of about 2 : 1 in favour of the upper lid would hold good in these, so that *quâ* site of primary lesion the series would probably be better grouped thus:—

Upper lid	62
Lower lid	30
Bulb	31
Combinations of above, in which the original site of infection cannot be assumed	83
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Family medical history.—A history of tuberculous disease in the parents or grand-parents may fairly be reckoned as a factor in the etiology of tuberculosis of the conjunctiva for two reasons. In the first place, it is a matter of common experience that the offspring of tuberculous individuals exhibit a certain susceptibility towards bacillus tuberculosis—and indeed to many bacteria—probably on account of low cell resistance; and secondly, association with tuberculous individuals in the intimacy of family life affords so many opportunities for infection that are avoided by members of healthy families. But when dealing with tuberculosis of the conjunctiva other than lupus one is struck by the absence of tuberculous family histories, and in some of the reports stress is laid upon the fact that no history of tubercle, family or personal, could be obtained. In four of my own cases there was a history of a phthisical relative or fellow worker.

Personal medical history.—Again, considering the number of cases in which multiple tuberculous lesions are present, a personal history of tuberculosis is of importance, but (once more excluding the cases of lupus) out of the remaining 160 cases of tuberculosis of the conjunctiva there are only 7 in whom pulmonary tuberculosis existed at the time they came under observation. In two others tuberculous cervical glands associated with lupus had existed prior to the conjunctival lesion, which from the clinical point of view was itself not lupus of the conjunctiva (Group IV.), but belonged to Group III. These facts are in striking contrast to the findings in intra-ocular tuberculosis, where, as Treacher Collins[4] has pointed out, tuberculous family and personal histories are the rule rather than the exception.

B. *Exciting Cause.*

The exciting cause, the real etiological factor in tuberculosis of the conjunctiva, is the tubercle bacillus. Considerable importance is being attached at the present time to the differentiation of the tubercle bacillus, isolated from lesions in man, into one of two main types, the human and the bovine. In 1898 Theobald Smith drew attention to the existence of two varieties of the tubercle bacillus, the one which he had isolated from human sputum, and the other from tuberculous lesions in cattle, and pointed out certain material distinctions which could be drawn between the two types; but although his investigations attracted some notice it was still considered that these differences, probably due to environmental influences, were of but minor importance, and that all mammalian tuberculosis was due to the same micro-organism. At the Tuberculosis Congress in 1901, however, Koch expressed the opinion that human and bovine tuberculosis were two separate and distinct diseases, and due to two separate and distinct acid-fast bacilli. It will be fresh within your memory that a Royal Commission was appointed to investigate the subject, and its report, recently published, confirms in effect Theobald Smith's observations—namely, that there are two types of tubercle bacilli, the human and the bovine, of which the bovine is not only the exciting cause in bovine and animal tuberculosis, but is also responsible for some 20 per cent. of the tuberculous infections in man. It is, therefore, a matter of some importance to determine whether tuberculosis of the conjunctiva as a whole, or in one or more of the five generally accepted types, is due to infection with the bovine tubercle bacillus. Before, however, dealing with this question it will be well to summarise the data upon which a distinction between human and bovine tubercle bacilli can be based. The tubercle bacillus of the bovine type is quite short, from 1–1·5μ, straight, not regular in outline, some individuals being wedge-shaped, some spindle-shaped; others resemble oval cocci. It grows with difficulty upon artificial media, and is highly virulent for the ordinary laboratory animals, particularly the guinea-pig and the rabbit. Thus, in the adult guinea-pig subcutaneous inoculation of bovine tubercle bacilli (artificial cultivations) results in the occurrence of extensive lesions, marked by necrosis and caseation and the presence of numerous bacilli, death ensuing in from 4 to 6 weeks. Intraperitoneal inoculations produce similar effects and cause death in from 7 to 14 or 15 days. Intravenous inoculations into the rabbit produce death in 17 to 21 days. Inoculations into the anterior chamber of the eye give rise to iritis in 7 or 8 days and produce death in 3 weeks.

The human tubercle bacillus is long (about 3μ) and slender, straight or slightly curved, and very frequently shows segmentation of the protoplasm, so that the stained bacillus closely resembles a short chain of cocci. It grows readily and vigorously upon artificial media, and although

[4] Intra-ocular Tuberculosis, Ophthalmoscope, No. 5, 1907, p. 11.

virulent for the guinea-pig and rabbit, is markedly less so than the bovine bacillus. Subcutaneous inoculation into the guinea-pig results in the formation of slight lesions, the tubercles growing but very slowly and long remaining translucent, with a tendency to reparative changes. The course of the infection is chronic, necrosis is rare, bacilli are very scarce, and death does not usually occur under 12 weeks. Intraperitoneal injections more rapidly produce a fatal termination, the course of the infection being from four to six weeks. Intravenous inoculations into the rabbit give rise to an infection which terminates fatally in five weeks or longer, while inoculations into the anterior chamber of the eye give rise to iritis which develops in about four to six weeks.

In the recorded cases of tuberculous conjunctivitis no mention is made of any investigation into the question of the type of bacillus tuberculosis present in the lesions. But although no information has hitherto been communicated with reference to this differentiation, some of the material from my own cases, even the early ones, is still available, and it is interesting to note that this re-study of my sections has shown the presence of tubercle bacilli in tissues from cases where I had previously relied solely on the result of inoculation experiments for the confirmation of the diagnosis. It must, however, be recollected that I am presenting my results rather in the form of a pious opinion than of incontrovertible fact, since, as I have been unable to carry out cultural experiments, the tubercle bacillus has not been isolated and fully studied. I have therefore been forced to depend upon the morphology of the bacilli present in the sections of tissue, and upon the results of the inoculation experiments, applying the following criteria. Where the bacillus first observed has been long, slender, moniliform, and has not caused the death of the inoculated guinea-pig until after some time, I have regarded this bacillus as belonging to the *typus humanus*. When, on the other hand, the bacillus in the tissues has been short, irregular and evenly stained, and has produced rapidly a fatal general tuberculosis in the inoculated guinea-pig, I have regarded this organism as belonging to the *typus bovinus*. The fallacies are obvious. In the first place, as the Tuberculosis Commission has pointed out, numerous intermediate types of the tubercle bacillus exist with morphological characters midway between the extremes I have described, and in the second the course of a tuberculous infection is very largely a function of the size of dose—in other words, the numbers of bacilli introduced—as I have already mentioned, and variations in this respect produce corresponding variations in the duration of the disease, in its final termination, and in the extent and distribution of the lesions.

With a full appreciation of these points I place my results before you in tabular form, from which it will be seen that the human tubercle bacillus is assumed to be responsible for at least 62 per cent. of my cases and the bovine strain for about 17·2 per cent. No material was available for examination from the lupus case, but as lupus in general is considered to be due to infection by the human type, it is almost justifiable to regard this strain as the exciting cause in 72·4 per cent. But to avoid anything approaching dogmatism I will say that I regard the human type of tubercle bacillus as that usually responsible for the infection in tuberculous conjunctivitis, particularly in those cases where the lesion affects the type seen in the third clinical group, and the bovine type as an unusual exciting factor.

TABLE III.—*Showing the Type of Tubercle Bacillus present in Tuberculosis of the Conjunctiva.*

Clinical group.	Number of cases.	Bacillus tuberculosis.		Material lacking or result of examination doubtful.
		Human type.	Bovine type.	
I.	4	2	1	1
II.	7	3	2	2
III.	11	11	0	0
IV.	3	0	0	3
V.	4	2	2	0
Totals...	29	18	5	6

PATHS OF INFECTION.

Infection of the conjunctiva by the tubercle bacillus may be derived either from exogenous or endogenous sources.

Exogenous Sources.

1. *Direct extension by continuity of surface from pre-existing tuberculous lesions.*—This is the path of infection in cases of lupus of the conjunctiva, the spread taking place by continuity of surface either through the lacrymal duct from the mucous membrane of the nose, or from the adjacent skin surface of the face. Primary lupus of the conjunctiva I have never seen, and in the one or two recorded cases the evidence has not been sufficiently convincing that this direct extension had not taken place. Further comment on this path of infection is unnecessary.

2. *Direct inoculation of the conjunctiva.*—In 1897 I stated that "the conjunctival lesion is nothing more than a direct local infection resulting from the introduction of tuberculous material into the conjunctival tissues, and it may be safely assumed that in the cases belonging to Groups I., II., and V. this is invariably the case." That this opinion is correct in the majority of instances I am still prepared to maintain, and I will now summarise the points in its favour.

(*a*) In the vast majority of these cases there is a total absence of evidence of the existence of tuberculous lesions elsewhere in the body.

(*b*) Frequently strong evidence is obtainable of exposure of the patient to tuberculous infection in the persons of relatives, friends, or companions in work or play, or at school. In this connexion may be mentioned Birch-Hirschfeld's case of the cowman who was in the habit of milking a cow with tuberculous disease of the udder, and who subsequently developed tuberculosis of the conjunctiva of the second group.

(*c*) Many instances of the very act of inoculation can be adduced, as, for example, Fano's case and also Knapp's, following tenotomy, and Pregel's, in which infection was conveyed by a foreign body.

(*d*) Experimental evidence shows that the inoculation of tuberculous material upon the conjunctival surface of the lid of the rabbit will result in the formation of definite tubercles resembling those met with in the second group, and in one instance at least I have seen these tubercles caseate, necrose, and break down into ulcers similar to those observed in the human subject in the first group.

(*e*) Anatomically the primary lesion—the miliary tubercle—usually makes its appearance, if bulbar, at or near the corneal margin on the equatorial line; if palpebral, on the tarsal conjunctiva, somewhere midway between the lid margin and the fornix, sometimes in the interval between adjacent Meibomian glands. Where several tubercles are present on the tarsal conjunctiva they take a linear arrangement, roughly parallel to the lid margin. The dense connective tissue forming the tarsus appears to offer a complete barrier to the extension of the infective process in this direction, and extension takes place only through the conjunctiva itself in the direction of the lymph-flow—that is, towards the fornix—where the laxity of the tissues and the volume of the blood-supply combine to favour rapid cell proliferation and the formation of exuberant granulations.

(*f*) Histologically the infective process can usually be shown to originate in the adenoid tissue of the substantia propria of the conjunctiva or in or around the glands of Henle. Occasionally the infection appears to have originated in or in close proximity to the lateral diverticula of the Meibomian glands. In any case, the infective process is marked by cell proliferation and exudation to such an extent that the conjunctiva superficial to the tarsal cartilage becomes enormously hypertrophied, often to 40 or 50 times its normal thickness.

So that my previous opinion as to the pathology of tuberculosis of the conjunctiva of the first, second, and fifth types remains unaltered; that is to say, it is practically always the result of the direct inoculation of tubercle bacilli, possibly (1) between the interstices of the epithelial cells of an apparently normal conjunctiva (since we know that such infection can readily take place in the case of another organism, micrococcus melitensis); (2) into a broken-down phlyctenule; (3) into an occluded or possibly a ruptured Meibomian gland; and (4) into some abrasion or other slight trauma. I do not deny, however, the possibility of an endogenous source of infection in these cases, and to this point I shall refer in a moment.

The infective virus can be obtained from many sources: (1) From contact with phthisical relatives, friends, playmates; (2) by conveyance from similar sources by soiled handkerchiefs, towels, and so on; (3) by dried particles of infective material floating in currents of air (for it will be seen that I assume the majority of infections are due to inoculation with the human type of tubercle bacillus); and (4) possibly by the transference of infective milk by fingers or otherwise to the conjunctival sac.

Endogenous (Hæmic) Sources.

That tuberculous conjunctivitis may occur as part of a general tuberculous infection is shown by an experiment noted by Theobald Smith, where a rabbit inoculated intravenously with a culture of tubercle bacillus developed three flattened disc-like excrescences—lesions of the conjunctiva

corresponding to Group III. as it occurs in the human subject; he also states that nodular thickening existed in both lids *external to the lobules of the Meibomian glands*. One human case, which I have already referred to, where tubercles corresponding to those of Group II. appeared on the bulbar conjunctiva immediately over an area of scleritis already diagnosed as tuberculous, affords support to the possibility of this method of infection. This, however, is an isolated case.

Theobald Smith's example of an infection of the conjunctiva from the blood stream was the only instance observed throughout the course of his experiments. I have tried to repeat it, but without success, even when an attempt has been made to determine localisation of the bacilli to the conjunctiva by trauma.

Moreover, during the course of the last 15 years I must have inoculated tuberculous material by various channels into hundreds of rabbits and guinea-pigs for purposes of diagnosis, and have produced generalised tuberculosis in considerably more than half of these experimental animals, but in no single instance have I produced conjunctival lesions except in those cases where the conjunctiva has been the seat of the inoculation.

Also from a consideration of the blood-supply of the eye and its appendages it would appear most probable that in a hæmic infection of the intensity that would occur naturally the bacilli would be carried by the central artery to the interior of the globe, and would most probably settle in the plexuses of the free or attached margins of the iris—and this is what usually happens in experimental hæmic infections—or if taken on by the lacrymal and palpebral arteries would be more likely to settle in the superficial structures of the eyelid in some portion of the tarsal arch—that is, external to the lobules of the Meibomian glands, a condition I have not yet seen—rather than proceed onwards with the minute vessels that pierce the tarsal cartilage to infect the conjunctiva beyond.

For these various reasons I cannot but regard this method of infection, although possible, as extremely rare.

TREATMENT.

Although I am at the moment hardly concerned with the question of treatment, I cannot refrain from adding some remarks upon the subject. One spontaneous cure has been recorded, and although it is unlikely that many tuberculous lesions of the conjunctiva undergo such complete retrogressive and reparative changes, the first measures should undoubtedly be directed to increasing the resisting powers of the tissue cells of the infected individual by attention to general hygiene, abundance of fresh air, generous diet, regulation of the body functions, and the exhibition of any constitutional treatment—e.g., malt, cod-liver oil, iron, arsenic, &c.—that may be indicated.

The assistance of X rays has been invoked by several observers, and eminently successful results have been recorded by Cassali, Stephenson, and others. Fifteen years ago, when discussing this subject, I wrote that "the treatment of tuberculosis of the conjunctiva must be conducted upon lines precisely similar to those which guide us in the treatment of local tuberculous lesions in other organs—viz., early and complete removal of the diseased area. The means by which this end is attained, whether by the use of the knife, the sharp spoon, or the galvano-cautery, must be left to the discretion of the individual surgeon, but it is obvious that the removal of the affected tissues must be thorough. If any of the tuberculous material whatever be left *in situ* it may, and possibly will, become the starting-point of a general tuberculosis."

In one of my own cases this apparently happened. The conjunctival lesion was removed from a child in whom no other tuberculous lesion could be demonstrated. When seen 12 months later there was no local recurrence, but the lungs were undoubtedly infected. Another case developed general miliary tuberculosis six months after excision of the diseased conjunctiva and died. In a third a patch of lupus made its appearance on the thigh. In the recorded cases I have analysed two subsequently developed pulmonary tuberculosis, and two others tuberculous pleurisy.

Again, "in advanced cases, where large areas of tissue are involved, complete removal is not always practicable, and a permanent cure must not be expected. Under these circumstances palliative treatment only can be pursued."

Since then my views have undergone some modification. I still advocate the complete removal of the local lesion if that can be done without risk of subsequent scarring and disfigurement, or of injury to the globe, in cases coming under Groups II. and V. Also in Groups I. and III. any scraping and cutting that will remove any considerable portion of the diseased tissue without involving similar risks should certainly be carried out, but in addition I strongly advocate the administration of Koch's tuberculin T.R. Carefully administered by the skilled observer the conjunctival lesions become absorbed—indeed, they may almost be said to melt away—and the conjunctiva returns to its original normal condition. Scarring and deformity are avoided. The infected glands, preauricular and submaxillary, also undergo resolution in most instances, although sometimes, if caseation has taken place before the case comes under observation, they will need opening and clearing out. In his Middlemore prize essay Bryan records one case of his own which resulted in a cure after 45 months' treatment, refers to Saxl's case (which was treated intermittently for three months and recorded as unsuccessful) and to the one shown by Mr. A. W. Ormond and myself to the Ophthalmological Society as cured after 12 months' treatment, and sums up by saying: "The results, then, of treatment of tuberculosis of the conjunctiva are good provided the treatment be persisted in over a long period." With his conclusion I agree. Since my first case in 1907 (admitted to Guy's Hospital under the care of Mr. Ormond) I have employed tuberculin in 10 others, making 11 in all. Of these 11 cases one, lupus of the conjunctiva extending from the face (treated with excision and tuberculin for four months), was much improved, and has not relapsed in the 12 months that have elapsed since he took his discharge, and one has only just commenced treatment. A third, lupus of the conjunctiva extending in this instance from the nasal mucous membrane, was not benefited in the least. Bovine tuberculin, human tuberculin, X rays, and radium were all tried in vain. Finally, a certain amount of relief has been afforded by operative measures, in the course of which practically the whole of the nasal septum was removed, as well as the conjunctival lesion. The remaining eight cases have been completely cured after treatment extending over periods varying from 4 to 14 months. The tuberculin used has been Koch T.R. (human) in 10 of the cases. My initial dose has been as small as 1/20,000 mgr. and my maximum dose has never exceeded 1/2000 mgr. The intervals between the doses have varied from seven days to three weeks.

MYELOID LEUKÆMIA—CHRONIC AND ACUTE.

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THIS paper is mainly based on an examination of all cases of myelæmia which have been treated at the London Hospital during the last three years, being 25 in all. We do not pretend to give a complete account of the disease, our attention having been for the most part directed to changes in the blood, particularly such as bear upon treatment, prognosis, and the relationship between this disease and lymphæmia.

The chronic cases all presented at some stages the blood changes and physical condition typical of myeloid leukæmia. The diagnosis of the acute cases is a matter for argument. All the cases have been examined so far as possible at regular intervals during the disease. The examination consisted of the enumeration of the total number of leucocytes, together with a complete differential count, and at intervals an estimation of the number of red cells and the percentage of hæmoglobin. The stain we have employed throughout has been Leishman's in 0·5 per cent. dilution.

1. *Chronic Cases.*

We begin with a brief account of the etiology, course, and treatment of the chronic cases, 21 in number.

Nationality.—Of the patients 3 were Hebrews, which represents about the proportion of Hebrew in-patients at the London Hospital.

Age.—The ages ranged from 8 years to 56 years. The disease appears to attack persons of all ages but to be rare in young children.

Sex.—Thirteen were males and 8 were females.

Previous illness.—There is nothing noteworthy or constant in the illnesses. In the case of one boy, aged 11 years, who came under observation five years previously for pulmonary trouble, the spleen was then noted to be normal.

Duration.—It is impossible to estimate the duration of these cases, since there is a period during which the disease causes no symptoms. Even in the cases discovered by accident the time of onset is equally uncertain. Two of these cases were admitted for pleurisy, and in one of them the pleurisy was right-sided, one was admitted for hæmorrhage after tooth extraction, one for a fall from a van, and one was first noticed after confinement. Of the 21 cases, 13 are dead, 2 have been lost sight of and are probably dead, and 6 are still under observation. The duration of the disease in the fatal cases, reckoned from the time of onset of symptoms, ranges from 11 months to five years, and, reckoned from the time under observation, from three weeks to four years. The mean duration from the onset of symptoms was one year and 11 months, and from the date of observation was one year and three months. The patient who up to the present lived considerably the longest was a man aged 52 years, but the younger individuals do not appear to run a more acute course than the older ones.

Cause of death.—Of the 13 patients who have died, one had general tuberculosis, one had several cutaneous abscesses due to a staphylococcic infection, and one had numerous pulmonary infarcts. The remainder showed no serious complications.

Treatment.—The great majority of these cases were treated with arsenic and X rays. The effect of these substances, as is well known, is to cause a diminution in the size of the spleen and in the number of leucocytes. In four of our fatal cases no definite changes occurred, and the treatment hardly appeared to influence the course of the disease. In those cases in which marked effect was produced by the treatment it is open to doubt whether that effect was beneficial. In some cases treatment was followed by effects the reverse of beneficial. Case 1, a boy aged 8, who was admitted in apparently good health, was given arsenic and one application of X rays; immediately after the X rays the temperature rose to 104° F., the spleen rapidly became smaller, the leucocytes fell to half their original number, and the patient died two weeks later. We have known a similar result follow one or two applications of X rays in a case of myelæmia not included in this series and in a case of chronic lymphatic leukæmia.

The results of treatment may be extremely gratifying, and the condition of the patient may return practically to normal, a return which in all our cases, however, has been only temporary. We would emphasise the fact that a diminution in the number of leucocytes and in the size of the spleen is not necessarily evidence of improvement but may be the reverse. A drop in the total number of leucocytes accompanied by a relative increase in the myeloblast cells is suggestive of a fatal termination in the near future, and such an event may result from treatment in a case apparently proceeding favourably. As a fairly typical example of the course of disease as influenced by treatment we may briefly describe Case 11.

A woman, aged 35 years, was admitted in May, 1910, with a six months' history of splenic enlargement. The white cells on May 9th numbered 230,000 per c.mm. She was given arsenic and X rays. On July 2nd the white cells numbered 4000 per c.mm., the percentage of granular cells being 90. About this time pericarditis developed, from which she recovered and she was discharged much improved. On July 31st the white cells had fallen to 1020 per c.mm. On Nov. 11th they numbered 3000 per c.mm.; no abnormal cells were present in the blood and the spleen was just palpable. X rays and arsenic were stopped. On Feb. 14th, 1911, the leucocytes were 31,000 per c.mm. and on March 24th, 30,000. X rays and arsenic were given again, and on April 26th the leucocytes had fallen to 5000, the percentage of granular cells remaining high. Treatment was stopped and the patient was readmitted on May 30th for abdominal pain (due to gall-stones). The leucocytes then numbered 54,000 and arsenic was administered. This was followed by a steady drop in the leucocytes to 36,000 on June 8th, 22,000 on June 19th, 15,000 on July 1st, and 7400 on July 10th. This drop was accompanied for the first time by a marked increase in the non-granular cells of the myeloblast type. On July 27th the patient died.

In this case the period of life may have been prolonged by the beneficial effects of treatment in the middle period of the disease. The total duration of life, however, was no longer than the average of the series. We are under the impression that cases of myelæmia, which we have observed before the introduction of active X ray treatment, presented fewer fluctuations in their condition and lived for longer periods. We are certainly of the opinion that treatment by X rays or by arsenic may produce changes in the blood introductory to a fatal issue. In view of the remarkable and apparently beneficial effects which may be produced by these methods of treatment, the results in these cases, and in the cases of other observers, are most disappointing. In order to avoid over-treatment of a patient it is evident that the dosage of the X rays or the arsenic should be controlled not only by the clinical condition of the patient but also by careful and repeated examinations of the blood changes. A review of these cases leads us to the belief that the blood change to be aimed at is a reduction in the number of leucocytes to a number approximating but not less than the normal, the relative percentage of granular cells being unaltered. A drop in the number of white cells, accompanied by an increase in the percentage of the non-granular cells and particularly in the percentage of myeloblasts, is urgent evidence of over-treatment. Such an unfavourable blood picture may, of course, arise apart from treatment or in spite of it.

Two of these cases were treated by intravenous injections of salvarsan. Both patients are dead. In neither case did the treatment appear to have any favourable effect.

Condition of the blood.—All these cases showed at some time the typical characters of myeloid leukæmia. It is impossible to give any account of the very large number of differential counts made, and we describe only the more marked changes, particularly in their relation to treatment and diagnosis.

In 11 cases no great fluctuations were observed in the leucocytes. Of these 11, 3 are still alive and 2 have been lost sight of; 1 died from tuberculosis, 1 from pulmonary infarction, and 1 lived for five years, or more than twice as long as any other case in the series. The remaining 3 were observed throughout their illnesses, and were in every way typical examples of myelæmia. All 3 cases developed a grave and progressive anæmia, accompanied by large numbers of nucleated red cells in the blood, and in none of these was hæmorrhage a marked feature. In other words, these 3 patients died from failure of the erythroblastic rather than of the leucoblastic tissues. In the whole series of 21 cases nucleated red cells were present but in small numbers only, except after hæmorrhage and in the three cases mentioned above.

Of the 10 cases which showed marked variations in the leucocytes 7 died, and no cause other than leucoblastic failure was found. The features of leucoblastic failure are: (1) a fall in the output of leucocytes; and (2) a failure on the part of the leucocytes to develop. The serious feature is the failure of development of the cells rather than the fall in the numbers. The faulty development manifests itself by the appearance in the blood of large numbers of non-granular cells. The percentage of these cells in such circumstances in our series varies from about 40 to 98. In a typical myelæmic blood film over 90 per cent. of the cells are granular. A marked drop in the number of leucocytes to normal or even below normal may take place without a drop in the granular cells, and this is accompanied by an improvement in the clinical condition of the patient.

The appearance of these non-granular cells in myelæmia has been previously noted by numerous observers. Their presence in considerable numbers has been remarked on as an occurrence of great rarity. The points we wish to emphasise are these: the cells are to be found, though in comparatively small numbers, in all cases of myelæmia, at all stages of the disease. (We have noted them for several years in numerous cases not included in this recent series.) In those cases which die from leucoblastic failure—that is to say, in probably the majority of all cases—they become relatively much increased. The increase of these cells may be so great (98 per cent. in one of these cases and 95 per cent. in another case) that the condition may be mistaken for lymphatic leukæmia. The nature of these non-granular cells has been a matter of considerable dispute, and has an important bearing upon our conception of the two diseases myelæmia and lymphæmia. It is held by some that these two conditions are identical, that myelæmia may terminate by an acute lymphæmia, the non-granular cells being identical with lymphocytes. It is also held that the cells

present in lymphæmia are not lymphocytes but are non-granular myelocytes, that lymphæmia is an acute form of the chronic disease myelæmia.

The problem can hardly be solved until the cause or causes of the conditions are known, but at present we are of the opinion that lymphæmia and myelæmia are different diseases, each having its acute and chronic form. Between myelæmia in its typical or chronic type and lymphæmia in its almost invariable acute form the differences both in the blood picture and in the clinical condition of the patient are so extreme that no obvious relationship between the diseases is suggested.

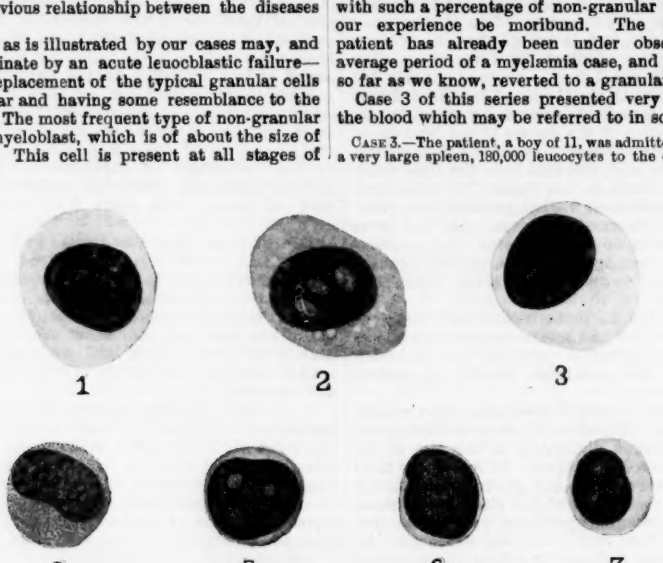
Chronic myelæmia as is illustrated by our cases may, and frequently does, terminate by an acute leucoblastic failure—that is to say, by a replacement of the typical granular cells with cells non-granular and having some resemblance to the lymphocytic types. The most frequent type of non-granular cell is the so-called myeloblast, which is of about the size of a large lymphocyte. This cell is present at all stages of myelæmia, and during the stage of compensation all gradations between the non-granular myeloblasts and the large type of neutrophilic myelocyte can be detected. In Case 11 of this series this form of myeloblast made up 30 per cent. of the total leucocytes. Such a blood picture has to be distinguished from the extremely rare condition of chronic lymphatic leukæmia in which the lymphocytes are of the large type. The large lymphocyte of chronic lymphæmia closely resembles the normal cell and differs from it only in an absence of the azure granules and in presenting a certain air of shrivelled dilapidation. The cytoplasm stains a pale blue. The myeloblast has an intensely basophile cytoplasm, often staining a striking greenish blue with Leishman's stain, the cytoplasm frequently being vacuolated; the colour reaction of the cytoplasm is most characteristic, and in our experience sharply distinguishes the two types of cell; the nucleus takes the stain less deeply than that of a lymphocyte, is usually large and fills most of the cell; it frequently shows three or four pale, pear-shaped, sharp-edged nucleoli (see figure).

On clinical grounds there is the same apparent similarity between the two diseases, since chronic lymphæmia may be accompanied by great enlargement of the spleen, no apparent enlargement of the glands, and no severe symptoms. Such a case has been under our observation for three and a half years. The patient, a man aged 47, performs heavy manual work, yet he has a spleen reaching into his pelvis, and his leucocytes, of which 94 per cent. are large lymphocytes, number 150,000 per c.mm.; a film taken of his blood now could not be distinguished from one taken at any time during the last three and a half years. A case of myelæmia with such a percentage of non-granular myelocytes would in our experience be moribund. The chronic lymphæmia patient has already been under observation double the average period of a myelæmia case, and his cells have never, so far as we know, reverted to a granular type.

Case 3 of this series presented very unusual changes in the blood which may be referred to in some detail.

CASE 3.—The patient, a boy of 11, was admitted in October, 1910, with a very large spleen, 180,000 leucocytes to the c.mm., and with all the physical signs and blood changes typical of myelæmia. After prolonged treatment with X rays his spleen diminished greatly in size and his leucocytes in numbers. In the following March his blood, except for a slight secondary anæmia, was almost normal. On Sept. 2nd, 1911, he was seen as an out-patient and appeared in good health; his white cells numbered 10,000 per c.mm. and his spleen reached the umbilicus. On the 19th he was readmitted with profuse purpura and bleeding gums, looking extremely ill; his white cells had fallen to 4600 per c.mm., but his stained blood was practically normal. On Oct. 5th his white cells had fallen further to 3600 per c.mm. and a great change had taken place in the character of the cells, 72 per cent. of the leucocytes now consisting of small, non-granular, mononuclear cells, while a few similar cells with neutrophile granules were present in addition. On Oct. 16th the white cells numbered 30,000 per c.mm., and 98 per cent. of these consisted of these small non-granular cells. The patient died three days later and similar cells were present in the blood a few hours before death.

A film of this blood shown to anyone without comment would at first glance be taken for a film from a case of acute lymphatic leukæmia. The condition of the boy in his final illness closely resembled that of an acute lymphæmia in the suddenness of onset and the brief duration of symptoms, in the presence of purpura, in the considerable degree of fever present and in the moderate enlargement of the spleen, which did not reach below the level of



1. Large lymphocyte (case of chronic lymphæmia). 2. Myeloblast. 3. Large lymphocyte (normal blood). 4. Neutrophile myelocyte (small type). 5. Myeloblast (Case 3). 6. Small lymphocyte (acute lymphæmia). 7. Small lymphocyte (normal blood). 8. Granular large hyaline (Case 25). 9. Large hyaline (Case 15). 10. Large hyaline (normal blood). [The relative sizes of the cells, the presence or absence of granules, the depth of staining of cytoplasm and nucleus, as well as the occurrence of nucleoli, are indicated in the illustration. It is, of course, impossible by a simple photographic process to represent the varying shades and tints of colour which are so beautifully brought out by Leishman's stain.]

the umbilicus. There was no superficial glandular enlargement, by no means a conspicuous feature in all cases of lymphæmia. In view of the facts that the lymphocytes of lymphæmia are nearly always atypical and that they are considered by some to be in reality myeloblasts, this case might be taken as evidence that a chronic myelæmia may terminate as an acute lymphæmia. We examined the predominant cell in this case with particular care and compared it with the cells present in six cases of typical acute lymphæmia. In all the lymphatic cases the cytoplasm of the cell stained a pure blue, exactly resembling the colour reaction to Leishman's stain of the cytoplasm of the normal small lymphocyte. The cells in this case were of about the size of the small lymphocyte of leukæmia and presented nuclei almost always round and not notched with three or more well-marked nucleoli. The cytoplasm stained quite differently from any lymphocyte we have ever seen, being of a reddish-purple, and in a very few cells definite neutrophile granules were present. The cells were in our opinion identical with the small type of neutrophilic myelocyte, with the exception that granules were almost entirely absent, and should be classed as the small type of myeloblast, bearing the same relation to the small myelocyte that the ordinary large myeloblast does to the large myelocyte. Occasional small myeloblast cells are sometimes present in typical cases of myelæmia and are casually classed as lymphocytes; we believe, however, that they can always be distinguished from lymphoid cells, and bear no relation to them. We have not previously seen any case of myelæmia, nor do we remember any published case, in which this type of cell predominated to the extent recorded here.

In the final relapse of another case (21) the white cells numbered 69,000 per c.mm., and 95 per cent. of them were myeloblasts. The majority of these myeloblasts were of the large type, the minority of the small type present in the case previously described. A film of this blood again might readily be mistaken for one from a case of lymphatic leukæmia. This patient died two weeks later, and in the interval the leucocytes fell to 1400 per c.mm.

It was further noted in the terminal stages of these cases that the blood platelets disappeared entirely from the blood. An increase of the platelets is a marked feature of myelæmia, and we have in several cases observed a complete or almost complete absence of them during the late stages of the disease.

The post-mortem changes in these cases were those typical of myelæmia, and have been investigated by Dr. H. M. Turnbull. The histological changes in the tissues are being compared with those in the blood, both in the acute and chronic cases, and will form the subject of a joint communication at a future date. In one of the cases marked green pigmentation of the lymphatic glands was present, to the extent observed in chloroma.

2. *Acute Cases.*

The four cases considered here have in common a short history and an acute termination. The blood pictures vary widely, but we believe that all are myelæmias. The length of history is in two cases six months, in one case four months, and in one two months, but the period of definite illness is in all of much shorter duration.

The number of cases is too small to admit of any observation on etiology except in reference to the condition of the mouth. In two cases oral sepsis was a marked feature on admission to hospital, but other symptoms were present before the onset of the oral sepsis. The state of the month did not show any marked resistance to treatment when in hospital. Hence these cases do not afford evidence that oral sepsis is the originating factor.

A short account of each patient follows.

CASE 15.—Female, aged 36, admitted April 24th, 1909, under the care of Dr. Lewers, and died the 28th. For two months she had suffered from metrorrhagia, bronchitis, and oral sepsis. She had been worse during the previous week and the anæmia had rapidly increased. The temperature had been high. On admission she was in a drowsy condition. There were severe pyorrhœa alveolaris and extreme anæmia. The spleen was palpable. The temperature was 101° F. The fundus of the right eye was disorganised with recent and old hæmorrhages. The uterus was explored but nothing was found. Examination of the blood on April 28th gave the following results: Erythrocytes, 837,000; hæmoglobin, 10 per cent.; colour index, 0·6; leucocytes, 228,000. Differential count: polynuclear neutrophiles, 1·0; polynuclear eosinophiles, 0·6; small lymphocytes, 14·0; large lymphocytes, 3·6; large hyaline cells, 68·8; granular large hyaline cells, 4·2; myelocytes, neutrophilic 0·8, eosinophilic 3·6, amphophilic 0·2; myeloblasts, 3·2. No nucleated red cells were seen; blood platelets were absent.

The predominant cell is one indistinguishable from the large hyaline of normal blood, though many are certainly atypical. A certain percentage contain fairly numerous neutrophile granules, in others the nucleus is so convoluted as to resemble that of a polynuclear neutrophile; such cells might reasonably be called non-granular polynuclears. The 3 per cent. of myeloblasts have the usual basophilic cytoplasm with occasional vacuoles, and some few of these show indented nuclei similar to those of the large hyaline. Considering the blood picture as a whole, together with the post-mortem findings, we have little hesitation in regarding the predominant cells as myelogenic and the condition as myelæmia. The blood condition is remarkable, and has a very important bearing upon the position of the large hyaline cell, particularly as confirming the assumption that the seat of production of the large hyaline is the bone marrow. A careful examination of the films further suggests a close relationship between these cells, myelocytes and polynuclear neutrophiles, a histological condition in accord with the similar phagocytic function of the large hyaline and the polynuclear neutrophile, and with the clinical observation that an inflammatory increase of polynuclears is almost always associated with an absolute increase of the large hyaline, and that an absolute increase of the latter cell is also a fairly constant feature of myelæmia. We may add that the cell described here as large hyaline bears little resemblance to the abnormal lymphocyte with the deeply indented nucleus found in lymphæmia, nor is the staining reaction of the cytoplasm in any way similar (see figure) to that of the ordinary myeloblast.

Extract from the necropsy. (405/1909.) "Grey, cellular marrow in sternum, vertebræ, ribs and upper half of femur; red-current jelly, cellular marrow in lower half of femur. Enlarged, infiltrated spleen (1 lb. 2 oz.). Enlarged liver with extensive portal and slight extra-capillary infiltration (4 lb. 4 oz.). Free iron reaction absent. Considerable infiltration of cortex of kidneys (together 14½ oz.). Slightly enlarged infiltrated lymphatic glands. Petechiæ on all serous surfaces. Purpuric spots on skin. Severe pyorrhœa alveolaris."

CASE 25.—A male, aged 14, was admitted on Nov. 29th, 1911, under the care of Dr. Lewis Smith and died on Dec. 14th. He had been quite well until the end of August, 1911, when he had an attack of diarrhœa lasting a week. On Sept. 4th the gums and the glands of the neck became swollen. For ten days there was difficulty in swallowing. On admission he was very anæmic. The gums and lips were swollen, and there was slight hæmorrhage. The glands were enlarged in the neck, axillæ, and groins. The liver was enlarged, the lower margin being palpable at the level of the umbilicus. The edge was sharp and firm. The spleen was not felt. The left kidney was easily palpable. The temperature was 101° F. For a few days he appeared to improve. Then the swelling of the gums and the cervical glands increased and he became progressively more anæmic until death occurred. Blood examinations were made on different days with the following results:—

	(1) Nov. 30th.		(2) Dec. 6th.		(3) Dec. 12th.
Erythrocytes	2,240,000	.....	2,800,000	.....	2,600,000
Hæmoglobin	40%	.....	60%	.....	35%
Colour index	0·9	.....	1·0	.....	0·6
Leucocytes	160,000	.....	260,000	.....	223,000
Differential count:—					
Polynuclear neutrophiles	4·0	.....	2·8	.....	1·6
,, eosinophiles	0·6	.....	0·2	.....	0·2
Small lymphocytes ...	8·4	.....	5·0	.....	5·6
Large ,, ...	0·6	.....	1·2	.....	1·0
Large hyaline cells ...	79·0	.....	84·2	.....	83·6
Transitional neutrophiles	0·4	.....	0·4	.....	—
Myelocytes, neutrophile	3·4	.....	1·8	.....	3·8
,, eosinophile	0·4	.....	0·2	.....	—
Myeloblasts	3·2	.....	4·2	.....	4·2
	100·0		100·0		100·0

Nov. 30th: One normoblast and one megaloblast seen while counting 500 leucocytes. Blood platelets were absent. Dec. 6th: One normoblast seen while counting 500 leucocytes. Blood platelets absent. Dec. 12th: No nucleated red cells present. Blood platelets absent.

The cells described as "large hyalines" are all of one type but show differences amongst themselves. Some are identical with the large hyalines seen in normal blood, but the majority contain neutrophile granules. The number of granules in a cell varies. In some cells only a few are present, but most cells contain a considerable number, and nearly a quarter have the granules closely packed. These latter cells resemble myelocytes in size and character of the granules, but their nuclei have the irregular outline seen in the large hyaline cells, and the cytoplasm is that of the hyaline rather than that of the myelocyte. The nucleus also shows variations and in some cells is definitely convoluted. Thus the cell which occupies the middle position in this group is one which resembles a normal large hyaline with numerous neutrophile granules in the cytoplasm. The variations from this cell in one direction become indistinguishable

from typical large hyalines, and in other directions approach myelocytes and polynuclear neutrophiles. The general examination of the film supports the view that this is a case of myelæmia. Typical myelocytes are present and also myeloblasts.

The blood condition is very similar to that of Case 15, and differs only in the higher percentage of granular varieties among the hyaline cells. The number of nucleated red cells was very small throughout and the disturbance of the erythroblastic tissues never became extreme. Of the previous case it might be said that since the great majority of the cells were non-granular, and since lymphocytes may have notched nuclei, the cells were lymphocytic and the disease lymphæmia. This case with an intermediate type of cell strongly supports our view that the cells, though frequently non-granular, are myelæmic in origin.

Extract from the necropsy (1230/1911):—"Soft, greyish-red, cellular marrow in humerus and femur. Enlarged, infiltrated spleen (1 lb. 8 oz.). Enlarged liver (4 lb. 3 oz.) Diffuse and nodular infiltration of cortex of both kidneys (together 1 lb. 5½ oz.). Infiltration and considerable enlargement of glands. Hæmorrhages in substance and pelves of kidneys, in peritoneum, testicles, mucosa of stomach, and skin. Blood in intestine, and in pelvis and ureter of left kidney, and on gums, lips, nares, and left auditory canal."

CASE 5.—Male, aged 37, was admitted on August 14th, 1911, under the care of Mr. F. S. Kidd, and died on the 31st. For six months he had had frequency and pain on micturition and troublesome erections, but had been at work until three weeks previously. For three weeks he had complained of shortness of breath and dizziness. There were no other symptoms and the previous health was uneventful. He was admitted for investigation of the urinary system, and a blood examination was made on account of the anæmia observed. The temperature was normal throughout. The liver and spleen were not felt and no glands were palpable. The urine showed nothing abnormal and was sterile. He became progressively weaker and died from exhaustion.

Examination of the blood on different dates gave the following results:—

	Aug. 14th.		Aug. 23rd.		Aug. 31st.
Erythrocytes	1,350,000	.....	—	.....	—
Hæmoglobin	20%	.....	—	.....	—
Colour index	0·7	.....	—	.....	—
Leucocytes	1600	.....	2000	.....	2800
Differential count:—					
Polynuclear neutrophiles	34·4	.....	24·6	.....	—
,, eosinophiles	1·0	.....	2·6	.....	—
Small lymphocytes	16·2	.....	12·8	.....	—
Large lymphocytes	3·8	.....	3·4	.....	—
Large hyaline cells	0·4	.....	0·4	.....	—
Transitional neutrophiles	—	.....	0·2	.....	—
Coarsely granular basophiles	17·2	.....	12·4	.....	—
Finely granular ,,	0·4	.....	0·2	.....	—
Myelocytes, neutrophilic	1·0	.....	3·2	.....	—
,, eosinophilic	1·4	.....	3·4	.....	—
,, basophilic	0·6	.....	2·0	.....	—
,, amphophilic	2·2	.....	9·2	.....	—
Myeloblasts	21·4	.....	25·6	.....	—
	100·0	.....	100·0		

August 14th: No nucleated red cells present. Rouleaux formation marked. Blood platelets scanty. August 23rd: No nucleated red cells present. Rouleaux formation normal. No poikilocytosis. Blood platelets scanty. August 31st: Taken just before death.

The myeloblasts are identical with those found in cases of myelæmia. In addition to the numerous mast cells some basophilic myelocytes are present. An unusual number of cells contain both basophilic and eosinophilic granules. Other cells have the appearance of normal neutrophiles with a few coarse basophilic granules scattered through the cytoplasm. In spite of the extreme anæmia, rouleaux formation was not affected and no nucleated red cells were seen.

Notwithstanding the leucopenia and the absence of palpable spleen, we consider this to be a case of myelæmia. The very high percentage of mast cells, the large number of amphophilic myelocytes, together with the presence of every other variety of myelocyte and myeloblast, make up a blood picture seen in no other disease.

Extract from the necropsy (873/1911): "Small patch of fatty marrow in centre of humerus. Œdematous, cellular, mottled, greenish-grey and white marrow throughout rest of shaft. Similar cellular marrow in upper two-thirds of shaft of femur. Abundant, greenish-grey, cellular marrow in lumbar vertebræ and sternum. Grey marrow in ribs. Slightly infiltrated and enlarged soft spleen (11 oz.). Abundant free iron in liver (4 lb. 4 oz.) and spleen. Œdema and parenchymatous degeneration of kidneys (together 13 oz.). No infiltration of liver and kidneys. Very slight infiltration and no enlargement of lymphatic glands. Extreme anæmia."

CASE 6.—Female, aged 22, admitted on August 15th, 1911, under the care of Sir Bertrand Dawson, and died on Sept. 2nd. She had not felt well for the previous six months. For two months there had been symptoms of gastro-enteritis, and for three weeks before admission the condition of the mouth had been troublesome. On admission there was extreme anæmia. The gums were spongy, and there was a diffuse purpuric rash. The liver and spleen were not palpable. The temperature was 102° F. The glands were palpable in the neck, axillæ, and groins. Under treatment the mouth cleared up rapidly. Arsacetin was administered, and for a fortnight the condition remained stationary. Then the patient rapidly became worse, and died of exhaustion. Examination of the blood gave the following results:—

	August 16th.	August 21st.	August 28th.	August 31st.
Erythrocytes	1,000,000	800,000	580,000	550,000
Hæmoglobin	15%	10%	10%*	10%*
Colour index	0·7	0·6	—	—
Leucocytes	30,000	34,400	70,000	70,000
Differential count:—				
Polynuclear neutrophiles	41·0	42·4	24·6	26·6
Polynuclear eosinophiles	0·6	0·4	0·4	0·2
Small lymphocytes	10·8	18·8	5·4	4·4
Large lymphocytes	11·8	12·0	4·2	0·4
Large hyaline cells	7·4	4·6	3·4	2·4
Mast cells	0·6	0·4	0·2	0·2
Finely granular basophilic cells	0·2	—	—	—
Myelocytes, neutrophilic	21·0	16·2	55·8	59·0
Myelocytes, eosinophilic	0·2	—	—	—
Transitional neutrophiles	6·4	5·2	6·0	6·8
	100·0	100·0	100·0	100·0

* Approximate.

August 16th: Polychromatophilia present. Thirty-four normoblasts and 40 megaloblasts seen while counting 500 leucocytes. Blood platelets scanty. Poikilocytes very numerous. August 21st: Forty normoblasts and 35 megaloblasts seen while counting 500 leucocytes. August 28th: Forty-nine normoblasts and 84 megaloblasts seen while counting 200 leucocytes. August 31st: Ninety-one normoblasts and 71 megaloblasts seen while counting 200 leucocytes.

In spite of the absence of splenic enlargement there can be no question that the case is one of myelæmia. The actual illness appeared to have lasted only about two months, and for this reason, together with the small size of the spleen, we have classed this case as "acute."

Extract from the necropsy (892/1911). "Cellular, soft, red and greyish-red marrow throughout femur and humerus, with exception of two small fatty areas in femur. Greyish-red marrow in sternum and lumbar vertebræ. Infiltrated spleen (5½ oz.). Slight infiltration of liver (3 lb. 2½ oz.). Free iron in liver. Infiltration and marked enlargement of lymphatic glands, lingual and faucial tonsils, persistent thymus (20 grm.), Peyer's patches, and solitary follicles in small intestine. Severe parenchymatous degeneration of kidneys (together 13¼ oz.). No infiltration of kidneys. Hæmorrhages in lymphadenoid tissues, gums, conjunctivæ, pelves of kidneys, and mucosa of stomach. Purpuric spots on skin. Mouth clean."

Remarks.

The average duration of this disease in its chronic form is only 15 months from the time of coming under observation in the fatal cases. Those patients still alive are those most recently observed, and there is no reason to suppose that the duration of life will in them be markedly prolonged. In a small percentage of cases the immediate cause of death may be an intercurrent affection.

Death may occur by failure of the erythroblastic function of the marrow, and the presence of severe anæmia with large numbers of nucleated red cells in the blood is of grave prognosis. The more usual mode of death would seem to be by exhaustion of the leucoblastic tissues, as evidenced by the decreased production of leucocytes and the immaturity of the type produced.

Treatment by arsenic and X rays produces no alteration in the condition, or brings about a remarkable though temporary improvement, or in some cases appears to precipitate the fatal issue.

The most interesting blood change observed in these cases was the replacement of the typical granular cells by non-granular myeloblasts shortly before death. The myeloblasts are present in the stage of compensation, but in small numbers; they may come to outnumber all the other varieties of cells. The large type of myeloblast can be differentiated by Leishman's stain from other non-granular cells. The highest percentage of this type recorded in our series was 30. In another case the percentage was 95, but a proportion of these cells were either intermediate in size or of the small type. In a case recently recorded by Hudson,[1] and of which we have examined films, the number reached

[1] Royal London Ophthalmic Hospital Reports, vol. xviii., part 2, 1911.

77·75 per cent. In Rolleston's[2] very similar case a percentage of 48 was recorded. In Kleneberger's[3] case the number reached 78 per cent. and this author is of opinion that these cells cannot be recognised unless all intermediate varieties between myeloblasts, myelocytes, and polynuclear neutrophiles are present in the same film. These cases were reported as rarities, but were unusual only in the comparatively high percentages of myeloblasts observed.

The small type of myeloblast reached 98 per cent. of all the cells during the terminal stage of one of our cases. This cell can be differentiated from the small type of lymphocytes present in normal blood and in lymphatic leukæmia by Leishman's stain.

The appearance of myeloblasts in large numbers is of importance, not only because of the grave prognosis associated with their increase, but also from the point of view of the relationship between the two leukæmias. The fact that a typical myeloblast can be differentiated from a typical lymphocyte does not negative the view that one cell is derived from the other. The numerous intermediate cells which are found connecting the myeloblast with the polynuclear neutrophile is suggestive that the latter is derived from the former. We are not convinced of the connecting links between myeloblast and lymphocyte, and since the accurate genealogy of cells is extremely difficult to prove we consider the dual origin of lymphoid and myeloid cells to be a more simple and a more practical conception in the present state of our knowledge. We follow, therefore, the views of Ehrlich and Lazarus rather than those of Pappenheim.

The cases described by us as acute might have been acute only in their termination. We could obtain no evidence, however, of any prior chronic condition in any of the cases, and their clinical condition was scarcely suggestive of chronic myelæmia even in its terminal stages. A series of 20 acute cases has been collected by Wolfer,[4] but of these some were under treatment for several months, in some no blood examination was made, others were evidently septic infections, and the account of the majority of the cases is somewhat unsatisfactory. Wolfer concludes that the disease is commoner than is generally supposed.

The absence of marked splenic enlargement in these acute cases suggests a failure of any protective action of the spleen. The leucopenia present in one case, in spite of the overproduction of red marrow, is difficult to account for, and in two cases the type of leucocyte present was remarkable. The condition of "hyalæmia" present in the two cases referred to almost exhausts the possibilities of leucocytic blood changes, and has an important bearing upon our knowledge of the source and mode of production of this cell.

In conclusion, we have to thank the members of the London Hospital staff for their free permission to make use of their cases, and Dr. Turnbull for supplying us with the reports of the necropsies.

THE TREATMENT OF RODENT ULCER.

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THE treatment of rodent ulcer is a subject that has a more than ordinary interest for the members of this section. This is due to the fact that rodent ulcer is a superficial condition, in its earlier stages, at least; it is locally malignant, but does not tend to reproduce itself in distant parts. The methods we practise are mostly for local application, and whatever any of us may have to say about their use in the treatment of malignant disease, we cannot get away from the unfortunate fact that not one of them gives us the least control over metastasis. Rodent ulcer, being without this tendency, and yet undoubtedly malignant, makes for us a most excellent test of the efficiency of our methods and gives us great assistance in the elaboration of our technique.

[2] British Journal of Dermatology, vol. xxi., p. 377, 1909.
[3] Deutsche Medizinische Wochenschrift, p. 2161, 1909.
[4] New York Medical Journal, p. 1069, 1910.

[1] A paper read on April 19th, 1912, before the Electro-therapeutical Section, Royal Society of Medicine.

The methods mostly in use at the present time are the X rays, radium, zinc ionisation, and solid carbon dioxide. When we consider that the condition is a malignant one, it is astonishing how easy it is to get it to heal over, provided it has not invaded bone or cartilage. In fact, so easy is it that this constitutes a real danger; numbers of cases have been reported as cured that were only healed over without having completely destroyed the disease, and recurrence has set in sooner or later. It is on account of the large number of cases of recurrent rodent ulcer that I have seen during recent years that I feel constrained to bring the subject to your notice.

The causes of this failure to produce more permanent results are not very hard to find. Treatment by any form of radiation depends on the absorption of the rays by the tissues, and according to the extent of the absorption the effect may be anything from a mild degree of stimulation to an intense inflammation. It seems to be fairly well established that the rays most easily absorbed are the most active, and we have in consequence the greatest amount of reaction upon the surface towards which the rays are directed. As we go below the surface the effect of the irradiation diminishes very rapidly, and it is doubtful if the effect we desire in this disease can possibly be produced at a greater depth than one-half centimetre from the surface, short of producing a superficial necrosis.

Assuming these ideas to be correct, we may consider their bearing upon the disease in question. In a typical case of rodent ulcer we get a history of a small spot or pimple upon which a crust formed, and re-formed as often as it was removed, and gradually increased in size. This has been going on for two or three years probably, and at the time we see it the area of the ulcer is equivalent to that of a threepenny-piece, more or less. While it tends to increase its area more rapidly than its depth, processes are sent downwards to an extent that has an important influence upon the future of the case.

If we use the X rays or radium the radiations absorbed superficially are so efficient in dealing with this condition that we get the ulcer healed over before the deeper extensions of the growth are properly dealt with. They are left in a state of what might be termed suspended animation, decreasing in degree as the distance from the surface increases. This is even more marked if the case is treated with zinc ions. The salts of zinc and other metals make a superficial layer of albuminate no more than 1 or 2 mm. thick, through which further ions pass with great difficulty, if at all. The two cases of recurrence in the shortest time—under three months—that I have seen were treated by this method.

In a case of recurrence after one or other of these methods of treatment, we may safely assume that one or more processes of the growth have been extending well down from the surface, and the further from the surface the less it has been affected by the treatment. It is thus at the lowest point of the growth that operations are first resumed, and as the patient usually does not seek further advice until there is a superficial sore, we find a condition of things that is quite characteristic. Instead of being broad and shallow like a saucer it is now narrow and deep; and if we clean it out with a sharp spoon we shall find that it extends more deeply and widely than its external appearance suggests. The shape of the ulcer is now more like the interior of a Florence flask than a saucer, and the difficulties of efficiently treating such a condition with any form of radiation or ionisation are quite apparent.

It is a matter of common knowledge among radiologists that numbers of complete and satisfactory cures of rodent ulcer have been made by all of the first three methods I have mentioned. I have used them all myself with at least average success; one of the first cases healed by radium was referred to me by Mr. (now Sir Frederic) Eve in 1903. It was of fairly large size and the amount of radium used was small and of only moderate activity. Some 60 applications were given in all, and the case was apparently cured. Being a sailor he was not located later to find out his subsequent history. This, however, is by the way; what I wish to point out just now is that I have not come here this evening to decry the use of methods that have served us well in the past, but I am sure it will be agreed that we do get a certain number of recurrences no matter how carefully we do our work. It is with the object of reducing the number of these

recurrences that I am going to ask you to give a more general trial of a method that seems to promise well.

It was about the time I took up the use of solid carbon dioxide that my attention was particularly drawn to these recurrences, but I hesitated to use CO_2 until my experience with the method had been more extensive. I began to use it just two years ago, and I made a preliminary note in THE LANCET of July 9th, 1910, p. 130, of my first three cases, which were shown at the London meeting of the British Medical Association at the end of the month. These results were considered very satisfactory by all who saw them. Up to a few weeks ago there was no sign of recurrence. In the first case of all the crayon was not quite large enough to completely cover the ulcer at one edge, but I left it to see what would happen. The ulcer measured ¾ in. by ½ in., and it was completely healed on the twenty-first day—the untreated edge closing in as quickly as the others.

The results have been so extremely satisfactory in every way that from that time I have used no other method for treating this disease. I have now treated 27 cases, and so far as I know there has been but one recurrence. In this one I again purposely left a small part uncovered by the crayon. Though it all healed over rapidly the patient came back eight months later with a recurrence at this point. It was quite small, and a single application removed it.

My experience so far justifies me in saying that any case of rodent ulcer that is superficial, and has not invaded cartilage or bone, can be completely cured with a single application of this substance, and that the result will easily bear comparison with any form of radiation or ionisation in regard to appearance, and I am equally confident that time will prove it to be even more permanent. I will describe a typical case.

On Dec. 1st last a patient came to me (sent by Mr. J. S. Curgenven) with a rodent ulcer over the right malar bone. It was of two years' duration, of irregularly circular form, and its area equivalent to that of a sixpence. After cleaning the surface with a sharp spoon I applied the carbon dioxide. A thin slough separated on the fourth day, and the healing process was well established on the eighth. On the fifteenth day it was completely closed over, leaving scarcely a trace to show what had been there for so many months before. Of course, it is too soon to speak of permanence in this case, but it serves as an example of many I have done before and since, and except for the one mentioned I have had no recurrences so far as I know.

It may be asked upon what grounds I consider carbon dioxide an eminently suitable remedy for rodent ulcer. In the first place I have satisfied myself that there is little risk of producing necrosis of normal tissue by any application used in treatment, and also that it is quite easy to bring about the destruction of certain abnormal tissues—rodent ulcer among them—by the same means. I do not say that freezing by solid carbon dioxide has a "selective" action on the abnormal tissues; in fact, I consider that such a term should not be used respecting a physical agent of any kind, since it conveys a wrong impression to most minds. The vitality and resisting power of abnormal cells are less than the normal; no other explanation is required. If we heat some fragments of zinc and copper in a crucible we know that the zinc will melt first, and may be oxidised and consumed before the copper relinquishes its solid form. I have never heard it said that heat had a selective action on zinc or any other substance. I think the analogy is sufficiently close to show that the term "selective" is one we should not use in this connexion.

Another reason why I prefer carbon dioxide is that it is possible to get the efficient reaction we require more easily and more quickly by it than by any other means, and to a sufficient depth to make recurrence a much more remote event. The depth of the freezing is regulated by the time and pressure, and it is found quite easy to carry this far enough to encompass the region invaded by the average rodent ulcer. While the intensity of the freezing decreases with the depth, starting with a temperature of −79° C. there seems to be ample margin, since it does not appear that the reaction is materially influenced by a reduction of temperature beyond a moderate number of degrees below zero. It is the depth of a rodent ulcer that determines the ease with which it can be cured, and if cartilage or bone is involved it is really difficult.

The most obstinate cases I have had lately were recurrences, one of them after being apparently cured on three different occasions, first by the X rays, then by zinc ions, and lastly by radium. On each occasion the work was done in the best possible manner. Owing to the depth to which the disease has now reached it is worse than ever it was and more difficult to treat with success. Yet with the use of carbon dioxide previous experience leads me to think I shall overcome it, though it will take time and several applications. At the present time (May 13th) this case is closing up rapidly and has every appearance of being completely successful.

During the last few months I have had two cases that had been healed over by the X rays alone. In each of these I found that the disease had extended far more deeply and widely than the external appearances would lead one to expect. I have seen these cases once a week, and after cleaning out the ulcer with the sharp spoon the carbon dioxide was applied thoroughly to every part. This procedure is persevered with until every trace of the disease is removed and the whole area has a healthy appearance. This may take several weeks, and of this the patient should be warned, as also of the fact that to him the ulcer will be very much worse during this stage. When healthy reaction sets in properly there is no mistaking it, and ultimate healing is a matter of a few weeks only. Both these cases have healed over very satisfactorily except a small point of exposed cartilage on one of them, for which a small plastic operation may be necessary. I feel confident, however, that the disease has been eradicated.

There is another reason why I wish to put forward carbon dioxide as a regular method of treating rodent ulcer. It is well known that when recurrence follows treatment by radiation the tissues have been in some way altered, and they no longer react to the rays as they did at first; so much so in some cases that another method must be tried. I have satisfied myself that under these conditions carbon dioxide will act with its usual efficiency, and also from experience in treating thick fleshy moles, where several applications are sometimes necessary to get them level with the surrounding skin, I have found that previous applications make practically no difference in the reaction that follows. Apparently no permanent alteration takes place in areas formerly treated by this method, excepting, of course, a certain amount of fibrous tissue developed as a result of the inflammation. We need have no fear of anything in the nature of telangiectases, such as frequently follow the use of the X rays and radium.

As I have stated, I have now treated 27 cases by this method. I have treated many other cases by other methods, but I have come to the conclusion that solid carbon dioxide is the best of them all, both for the original ulcer and for the recurrences that follow other methods. Up to the present in my hands recurrences after treatment by this method have been conspicuous by their absence. I do not say that such will not take place; it is not only too soon to say anything of the kind, but this would be against all human experience. My original cases have remained well for two years and seem as perfect as one could wish for at present. There are no serious objections to its use in this disease. It is simple, rapid in application and in result, as well as thoroughly efficient—I believe it to be more uniformly efficient than any other means at our disposal.

It will be, of course, understood that I refer only to such cases as come within the province covered by our methods. Severe and extensive cases requiring the interference of the surgeon are outside the scope of these comments.

Harley-street, W.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—A meeting of this association will be held at 11, Chandos-street, Cavendish-square, London, W., on Tuesday, May 21st, under the presidency of Dr. W. R. Dawson, at 5.15 P.M. After the transaction of business the adjourned discussion of Dr. Bernard Hart's paper on a Case of Double Personality will be resumed. Dr. Robert Jones will read a paper on Classification of the Various Forms of Dementia, and Mr. John Frederick Briscoe will read a paper on Appendicitis in Asylums. Members will afterwards dine at the Café Monico at 7.30 for 7.45 P.M. precisely. The cost of dinner, exclusive of wine, will be 5s., evening dress optional. The honorary general secretary is Dr. M. A. Collins, Ewell Colony, Epsom.

INTENSE NEURALGIC PAIN IN THE ARMS AFTER CHILDBIRTH.

BY A. C. GEDDES, M.D. EDIN.,
PROFESSOR OF ANATOMY, ROYAL COLLEGE OF SURGEONS IN IRELAND.

THIS note is published in the hope that the facts it records may prove helpful to some practitioner. The writer is aware that in publishing it he is trespassing in fields with which he has no direct professional concern, and for this he apologises.

Eighteen months ago (autumn, 1910) the writer was asked by a medical colleague, Dr. A, if he could suggest any anatomical explanation for the occurrence of intense neuralgic pains in the arms after childbirth. Dr. A said that he had met with the condition once or twice in the course of practice, and that his wife, who had given birth to an unusually large boy baby some six weeks previously, was suffering so severely as to be incapacitated from nursing the child. Three, if not four, medical men had seen the patient, and the pains were as bad as ever. The treatment adopted had included the application of belladonna and chloroform liniments, friction with aconite ointment, the placing of first one arm and then the other in a sling, and the confining of the patient to bed. The liniments and ointments had done no good; the slings had given temporary relief; the confinement to bed was only useful so long as the patient refrained from sitting up and from holding the baby.

Mrs. A, age 30, is well known to the writer, although he had not seen her for some weeks prior to the time at which her husband spoke to him about her condition. That evening he saw her, and she informed him that the pain "shot" all over the arms, but was most intense over the lower part of the deltoid and the middle third of the biceps; it was aggravated by standing or on attempting to lift a weight—for example, the baby. Sleep, she said, was not much interfered with, as the pain passed off in about an hour after lying down.

In the course of conversation the following points were noticed: (1) The shoulders looked much less square than before the pregnancy; (2) the dress worn, which fitted accurately when it was new, some time early in the pregnancy, was wrinkled above the iliac crests, and at the back was rather dragged towards the axillæ; (3) when sitting Mrs. A selected an armchair and sat leaning forward with her forearms resting on the arms of the chair and her shoulders pushed up towards her ears—a position not at all customary for her; (4) after sitting in that position for some time she became markedly brighter and appeared to be relieved of the dragging pain.

The mental process leading up to the diagnosis was noted as follows:—

1. The area of maximum intensity of pain is the area of cutaneous distribution of the fifth cervical segment, and is not a single nerve area.

2. The pain is evidently of mechanical origin, because it is entirely relieved when the arms are supported or when the patient lies down, and is aggravated when the patient stands up or attempts to carry a weight upon her arms.

3. The shoulder girdle is held in position by the clavicle, the muscles, and the convexity of the thoracic wall.

4. During the later weeks of pregnancy the chest wall is dragged up by the diaphragm, which elevates the ribs into what is, in extreme cases, practically the full inspiratory position, with the result that the shoulder is raised. After childbirth the diaphragm descends and the ribs follow it down. Deprived of support the shoulders also sink. If the child be a large one these descents are to levels lower than those at which the parts lay before the pregnancy—a result of the relaxation of the abdominal musculature and the consequent descent of the abdominal viscera.

5. In the case of Mrs. A the shoulders are normally unusually square (male type). This is probably due to her athletic training as a girl at school. Her abdominal musculature must also, to judge by the physical feats of which she was capable, have been unusually well developed. During pregnancy the abdominal muscles could not possibly have been used as they were accustomed to be used; therefore they practically certainly lost much of their development. This, coupled with the facts dependent upon the size of the child, must have allowed an unusually great descent of the chest wall, and consequently of the shoulders, to occur after delivery.

6. When the shoulder girdle descends it travels round the arc of a circle of which the centre is at the sterno-clavicular articulation, and the radius the length of the clavicle. The nerves, however, must descend upon the arcs of circles, of which the centres are at the transverse processes of their corresponding vertebræ, and the radii the lengths from these points to the points at which the highest branches are given off to the muscles of the arm. In cases of marked descent of the shoulder girdle it is, therefore, a mechanical necessity that the nerves, more especially the fifth, are pulled upon, and pressed against the transverse processes of their own vertebræ. Such a condition of tension or pressure will be aggravated by the assumption of the erect attitude and by attempting to lift a weight, and will be diminished by supporting the arms or on lying down.

The diagnosis, therefore, was (1) that the pain in Mrs. A's arms was due to pressure of the fifth cervical nerves against the transverse processes of the fifth cervical vertebra; (2) that this was the result of a descent of the shoulder girdle consequent upon the descent of the ribs; (3) that the ribs descended because they lost the support of the diaphragm which followed the viscera down when they gravitated toward the pelvis after childbirth; and (4) that the viscera descended further than is usual because of the atrophy which was superadded to the inevitable relaxation of the abdominal muscles.

The immediate treatment suggested was to force up the diaphragm by allowing the weight of the abdominal viscera to come against it when the head and shoulders were depressed and the pelvis elevated, and then to apply some abdominal support (a folded towel placed inside the ordinary corset was used) before assuming the erect attitude. The ultimate treatment was to re-develop the abdominal muscles.

Asked about the condition at Easter, 1912—i.e., 18 months after the commencement of treatment—Mrs. A reported that the forcing and holding up of the diaphragm had from the very first entirely abolished the pain. Last summer rowing and tennis had re-developed the muscles, and all special precautions were abandoned. Once or twice this spring, when no efficient abdominal support has been applied and long days' tramping have been indulged in, there has been some pain in the arms in the afternoons when the abdominal muscles were getting tired, but this has at once disappeared on Mrs. A putting on a pair of corsets. The results seem to justify the diagnosis.

Dublin.

CYSTITIS AND URINARY ANTISEPTICS.

BY CAMPBELL WILLIAMS, F.R.C.S. ENG.

With a Note on Analyses of Urines for Formaldehyde by W. HARRISON MARTINDALE, PH.D.

Hexamethylenetetramine and allied drugs are frequently prescribed in bacilluric cystitis and the early stages of gonorrhœa. A mixture containing helmitol 5 gr., potass. citratis 20 gr., ext. tritici repentis liq. 1 dr., syr. aurant. ½ dr., aq. carui to 4 dr. is a favourite with me, the dose to be taken in an equal amount of water thrice or four times, the last dose at bedtime. This urinary antiseptic (helmitol) is stated to have the composition hexamethylenetetramine-anhydromethylene citrate, and it is by reason of its salt constitution incompatible with alkalies and their carbonates.

It is well known that the neutral citrate of potash is excreted as an alkaline carbonate, the citric radicle having been "burned up" in its passage to the bladder. One might imagine that the above amount of the potash salt taken in eight doses would reduce the ordinary acidity of *normal* urine, so that the tetramine compound would meet with either a neutral or an alkaline urine in the bladder. Although possibly it is split up into the base and the citrate salt, it would not be decomposed—arguing on analogy with hexamethylenetetramine—into formaldehyde. My clinical experience, however, led me to conclude that, whilst the combination of citrate of potash and helmitol reduced vesical irritability and gave relief to patients who had either the

acid or highly acid urine of bacilluria or the acidity so distressing in acute gonorrhœa, nevertheless the dosage was not sufficiently large as regards the potash salt to render the urine alkaline and so inhibit formic aldehyde liberation in the vesical or possibly the renal urine. The amount of formaldehyde set free might be reduced, but it would not be entirely non-existent. So long as the urine continued to show an acid reaction with litmus paper I continued with the citrate of potash.

The clinical results obtained determined me to persevere with my pharmaceutical heresy. But the letter of Dr. Anson Jordan, of Cambridge, in THE LANCET of March 9th, 1912, p. 684, in connexion with Dr. David Newman's able lectures on cystitis and the employment of the aforementioned drugs in combination,[1] led me to seek the aid of my friend, Dr. W. H. Martindale, in order to see whether I was relying on fact or fancy. He kindly undertook the analysis of samples of my own urine under conditions which are set forth in his report.

It is of interest to note that a small amount of formaldehyde was found in my urine under alkali (potassium citrate) treatment in the case of the over-night urine, but the analyst's conclusions may be read with regard to the matter. That none was detected in the morning urine may possibly be due to its dilute condition or the fact that it had been completely eliminated. It was pale straw-coloured, possibly owing to the best part of a pint of tea consumed at breakfast, in conjunction with a reduction in acidity which is presumed to occur normally at or about that time of day, constituting the so-called "alkaline tide."

I think that the results of the experiments tend to show that helmitol is not altogether wasted under the administration of potassium citrate, even when the drug is given in a case in which there is only normal urinary acidity, but potassium citrate should not be given in sufficient amount to render the urine quite alkaline. One might assume that the inhibition effects of the potash would be less in a case of bacilluric cystitis where the urine is at least irritatively acrid, even if it be not intensely so to the vesical mucous membrane.

NOTE ON ANALYSES OF SPECIMENS BY W. H. MARTINDALE, PH.D.

Mr. Campbell Williams handed me two samples of his urine for examination. One of these had been passed overnight—March 10th—and the other on the morning of March 11th at 10.45, under treatment with 40 grains of helmitol and 160 grains of potassium citrate spread over 48 hours. The specimens were examined for the presence of formaldehyde.

The detection of small amounts of formaldehyde in urine is no simple matter. Preliminary experiments showed that tests commonly employed for detection of formaldehyde (when used as a preservative) in milk, &c., yield unsatisfactory results in the case of urine. For example, Schiff's reagent yields a colouration with normal urines. Again, Rimini's test gives a greenish-brown (reddish-brown at first, quickly changing its colour); a small quantity of added formaldehyde is difficult to detect by this test in a normal urine. The phenol and sulphuric acid test is also unsatisfactory in view of the colour produced by the organic matter of the (normal) urine. The salicylic acid in sulphuric acid test of the U.S.P. is also not sufficiently delicate for the purpose.

The phloroglucin test (Extra Pharmacopœia, p. 890) was found to be more definite, as it gave no colour with normal urine, but in the presence of 1 part of formalin in 5000 of urine gave a decided terra-cotta or pinkish colour; there was a decided colouration with weaker strengths down to 1 in 50,000 which could be detected by comparing a blank test side by side. The *evening* sample of the urine showed presence of about 1 of formaldehyde in 50,000 by this reaction (= 1 of formalin in 20,000); the *morning* sample did not give any indication, but helmitol itself was found to give a perceptible colour with the phloroglucin test in proportion of 1 in 5000 of urine, though hardly any reaction with weaker strengths. An indication of formaldehyde was also obtained in the distillate from the evening sample by Rimini's test, but none was indicated by the morning specimen. Here, again, Schiff's reagent is useless, as three normal urines gave a positive result with the distillates, pointing to the presence of volatile aldehydes other than formaldehyde.

[1] THE LANCET, Feb. 24th (p. 490) and March 2nd (p. 570), 1912.

It is important to note that both the samples of urine were distinctly acid, and, minute quantities of formaldehyde being found, it became a question whether more would have shown itself had drugs been administered *purposely to render the urine acid*. To determine this it was decided to conduct some experiments *in vitro*.

A volume of normal urine (200 c.c.), having acidity = 0·2 per cent. NaH_2PO_4, was divided into two equal parts.

One portion (A) was acidified by further 0·8 per cent. NaH_2PO_4, making 1 per cent. NaH_2PO_4, which may be deemed a maximum acidity for normal urine. To 30 c.c. of this was added 0·1 grm. helmitol, it being argued that this proportion (i.e., a 15-grain dose in ½ pint) might approximate the conditions *in vivo*—at any rate, the proportion would not be greater.

After 10 minutes at 40° C. this liquid was tested as follows:—
10 c.c. with the phloroglucin test—distinct pink colour.
10 c.c. with the "meta" test (for details see below)—very slight opalescence in a few minutes, indicating possibly 1 of formaldehyde in between 5 and 10 thousand of urine.

After 10 hours at 40° C. the liquid tested as follows:—
10 c.c. with phloroglucin—pinkish colour.
10 c.c. the "meta" test—copious precipitate developing in four minutes.

30 c.c. of the other portion (B) treated with helmitol 0·1 grm. and then neutralised with sodium bicarbonate (*without* adding sodium acid phosphate) and tested as (A), gave as follows:—

After 10 minutes at 40° C.—
10 c.c. with the phloroglucin test—decided pink about same as A.
10 c.c. with the "meta" test—*nil* in four minutes.

After 10 hours at 40° C.—
10 c.c. with the phloroglucin test—pinkish colour slightly less than with the acid series.
10 c.c. with the "meta" test—very slight indication.

As control 30 c.c. of (B) were treated with 0·13 c.c. of formalin (= 0.05 grm. of formaldehyde). This amount of formaldehyde could be assumed to be yielded by 0·1 grm. of helmitol under the best conditions. (No allowance made for H.COH in the methylene-citrate radicle—see Conclusions.)

After 10 minutes at 40° C.—
10 c.c. with the phloroglucin test—crimson much stronger than (A) or (B).
10 c.c. with the "meta" test—immediate opalescence and precipitate.

After 10 hours—
10 c.c. with the phloroglucin test—strong red colour ... ... } Much greater than either the (A) or (B).
10 c.c. with the "meta" test—copious precipitate ... ... }

We know that the "meta" test shows 1 in 5000 at least of formaldehyde, and therefore as practically no reaction is seen either in the case of the acidified or neutral urines after 10 minutes at body temperature, and as we have here the opportunity of detecting about 1 in 570 of formaldeyde if decomposition of helmitol follows theory, it is clear that neither in acid nor in neutral urine has such complete decomposition taken place in that time. With regard to the 10-hour results, the "meta" test indicates more adequate production of formaldehyde in acid and little or none in neutral urine.

Details of the "Meta" Test.

In the course of this investigation I arranged a test that will indicate 1 of formaldehyde in 10,000 of urine. A 5 per cent. solution of meta-diamido-benzol hydrochloride yields with even very dilute formaldehyde solution (in plain water) a yellowish colour. Working with Nessler glasses or test tubes on a white ground with controls this is clearly seen in a proportion of 1 in 5000, or indeed a 1 in 50,000 could be detected. The method employed is to add 0·5 c.c. of the solution to 10 c.c. of liquid to be tested; the yellowish colour develops in about three to four minutes and is very characteristic. With *urines* the following facts were determined:—

10 c.c. of normal urine treated with "meta" shows no colour change.
10 c.c. of normal urine containing helmitol in proportion of 1 in 5000 gives no change.
10 c.c. of normal urine containing 1 of formaldehyde in 5000 gives an opalescence and ultimate bulky precipitate, developing in a few minutes.
The reaction was easily seen in an alkaline urine to which formaldehyde was added in proportion 1 in 10,000.

The reaction is of interest—I have not seen it described elsewhere—and is possibly explained by assuming a condensation between the "meta" and formaldehyde, with the production of a substance which interacts with some constituent or constituents of normal urine. A 3 per cent. urea solution was found to produce with 1 in 5000 formaldehyde a similar precipitate, but more slowly (a matter of two hours). The exact explanation of the test at the time of writing has not been determined. It might be of use in the examination of urine for detecting formaldehyde poisoning which sometimes occurs.

Examination of Urine under Helmitol and Dilute Nitro-hydrochloric Acid Treatment.

It may be added that the "patient" underwent a self-inflicted *régime* of acid. nitro-hydrochlor. dil. with helmitol alternately. He took two 15 m. doses of the former at respectively 12 midday and 8 P.M. and two 5 grain doses of helmitol at 2 and 10 P.M. respectively on March 12th. The overnight urine, 35 ounces, and the next morning's were examined. It is well-known that the administration of mineral acids does not necessarily increase acidity of the urine; at the same time, *propter hoc* or otherwise, there was relative increased acidity and vesical irritability.

The "meta" test in the overnight specimen showed formaldehyde less than 1 in 5000, whilst the morning's urine also showed a minute, practically negligible, amount. This urine was then "helmitolised" and "formalised" respectively and tested as before, with result that—

1 of helmitol in 10,000 gave (as anticipated) *nil*.
1 of formaldehyde in 10,000 gave characteristic opalescence and precipitate.
Control *nil*.

Conclusions.

The examinations of Mr. Campbell Williams's urine showed whilst under alkali treatment an amount of formaldehyde which, though minute, was doubtless commensurate with the doses taken. On the other hand, the *in vitro* experiments after the lapse of ten hours showed larger yield of formaldehyde under sodium acid phosphate than the experiments with neutral urine—the ten-minute results, however, being practically identical. In other words, Mr. Campbell Williams's claim was substantiated so far as the experiments went *in corpore vili*, but in the method adopted to simulate the process in the body there were signs of more marked formaldehyde production in the acidified urine.

It is open to discussion whether the oral administration of sodium acid phosphate or other acid-rendering substances produces so marked an effect on the urine as in the laboratory experiment. It would seem that the formaldehyde liberation is probably not greater under acid treatment than under potassium citrate. (It may be remarked that it is claimed that the substance acts equally well as an antiseptic whether in acid or alkaline urine. It should also be clearly understood that the anhydromethylene citrate radicle liberates formaldehyde, and probably has greater tendency to do so than hexamethylenetetramine itself.)

The conditions in the case of hexamethylenetetramine are somewhat different.

Hexamethylenetetramine Experiments.

It was thought of interest to carry out an investigation with hexamethylenetetramine on identical lines with the foregoing *in vitro* experiments:—

Two portions of urine were treated exactly as in the helmitol experiments, but with hexamethylenetetramine in place of the helmitol. Results were as follows:—

(A) Acidified:—
10 minutes—
Phloroglucin test—slight pink.
"Meta" test—minute or *nil*.
10 hours—
Phloroglucin—slight pink, possibly 1 in 50,000.
"Meta" test—practically *nil* (when carried to 20 hours slight precipitate).
(B) Neutralised:—
10 minutes—
Phloroglucin test—slight pink (shade less than A).
"Meta" test—minute or *nil*.
10 hours—
Phloroglucin test—practically *nil*.
"Meta test"—practically *nil*.

Control see the Control under helmitol experiments.

Conclusion.—There was no decomposition in either neutral urine or urine acidified with acid sodium phosphate in 10 minutes, but in 20 hours there was evidence of slight formaldehyde formation in urine so acidified. This would indicate that to obtain formaldehyde liberation from hexamethylenetetramine the simultaneous administration of an acid rendering substance is necessary, and *per contra* the compound should not be given with drugs in sufficient quantity to produce an alkaline urine. The following view of the action of hexamethylenetetramine is taken from the United States Dispensatory.

Taken internally it is eliminated with great rapidity generally unchanged, its presence often being detected in the urine in half an hour, and as long as 24 hours, after its ingestion. The old belief that it was largely decomposed with the liberation of formaldehyde in the kidney is probably not correct, although frequently formaldehyde may be detected in the urine after its administration. The change appears to take place after excretion from the kidney, and probably occurs only when there is an excess of acid in the urine. Hexamethylenetetramine probably is itself possessed of marked bactericidal powers, and it probably achieves good in urinary diseases by virtue of its own inherent properties.

THE TREATMENT OF CANCER WITH SELENIUM.

BY CHARLES E. WALKER, D.SC. LIVERP., M.R.C.S. ENG., L.R.C.P. LOND.

(*From the Research Department, Glasgow Cancer Hospital.*)

THE announcement that by the intravenous injection of a "compound of selenium and eosin" Professor Wassermann had been able to cure small cancerous tumours produced in mice by inoculation,[1] has no doubt led to many experiments with various preparations of selenium. Professor Wassermann gives no indication as to the nature of the preparation used by him, but a true compound of selenium and eosin must be of extreme complexity. A definite claim to the successful treatment of cancer in the human subject by intravenous injection of selenium in the colloidal form has been made recently.[2]

In view of these facts it may be of interest to the members of the medical profession to have an account of experiments with preparations of selenium carried out in a laboratory where great facilities exist. Almost immediately after the publication of Professor Wassermann's results, with the assistance of Dr. H. E. Whittingham and Mr. F. J. Robinson, I began experiments with selenium. The first preparation tried was colloidal selenium and eosin, which apparently form a colloidal complex.[3] These experiments are of particular interest in view of the claims now made for colloidal selenium. It has been suggested that chemically prepared colloidal selenium is not in sufficiently finely divided particles, and that resort has been had to the electric arc, as is the case in the preparation of the colloidal forms of the metals.[4] It is difficult to see how this has been possible as selenium is a very effective non-conductor. Its conductivity is increased, or rather its non-conductivity is decreased, by a very strong light, but the production of an electric arc in distilled water between points of selenium would appear to be so difficult as to be almost impracticable. The satisfactory preparation of selenium for therapeutical purposes in the colloidal form by chemical methods is sufficiently difficult. It is easy enough to arrive at the colloidal condition, but the difficulty is to obtain a permanent preparation. The colloidal selenium tends, upon the slightest provocation, to precipitate in the red amorphous form or to turn into the dioxide (SeO_2).

With experiments extending over two months sufficient facts were added to those already available to obtain a permanent preparation. The statement that the particles are not sufficiently small except when the electrical method is resorted to, if any electrical method has been discovered, does not apply to the preparations made in this laboratory, and the colloid is just as active at the end of six weeks as on the day it was made, and is not precipitating. Eosin is supposed to be an electrolyte to colloidal selenium. Practically the eosin used here has not so acted.

Mice and rats with grafted malignant growths of various sizes have been absolutely unaffected by intravenous injections of this preparation except that they have turned pink within 30 seconds or a minute of the injection, and their excreta have been pink for two or three days. Wassermann's preparation was highly toxic. The colloidal selenium, with or without eosin, is non-toxic. I have injected 0·25 c.c. into mice and 1 c.c. into rats without any ill-effects. It must be realised in this connexion that 0·25 c.c. in a mouse corresponds roughly to 700 c.c. in a man. No effect whatever was produced upon the tumours in either mice or rats. I have found that colloidal selenium is not toxic to monkeys, and the French reports state that it is not toxic to man. On

[1] THE LANCET, Jan. 13th, 1912, p. 112; Jan. 27th, p. 264.
[2] Société Médicale des Hôpitaux de Paris, Feb. 14th and March 1st, and Brit. Med. Jour., April 13th.
[3] The reasons for this conclusion are too technical to be of general interest.
[4] Brit. Med. Jour., April 13th.

the other hand, selenium dioxide is highly toxic. In mice 0·001 grm. causes death in a few minutes.

It would appear, then, that colloidal selenium cannot be the substance used by Professor Wassermann, as his preparation is highly, but apparently irregularly, toxic. In this connexion it may be well to remember that, as I have already said, colloidal selenium upon slight provocation, such as heat or exposure to an acid atmosphere like that of Glasgow, is transformed gradually into the dioxide, and in the earlier experiments with it in this laboratory we had many disasters before we discovered the cause. The possibility of colloidal selenium being supposed to possess the toxic characters of Wassermann's compound is thus rendered obvious.

Real combinations of eosin and selenium of doubtful composition have also been tried. Eosin is insoluble in an acid medium, and if a solution of eosin be poured into a solution of, say, selenium dioxide (selenious acid) or selenic acid, a precipitate is formed. These precipitates in some cases contain selenium, but injections of these, though highly toxic, apparently have no selective action upon the tumour cells. Again, after the precipitate has been formed, it may be dissolved by the gradual addition of an alkali. The properties of the resulting solutions vary according to the alkali used, but none of those tried here have had any selective action upon the tumours, though they are highly toxic.

My object in writing is not so much to give an account of negative experiments as to place on record the effect of colloidal selenium under experimental conditions in the treatment of tumours in a large number of animals, in order that undue optimism may not be excited by reports of isolated cases of cancer in the human subject which are stated to have been cured.

Glasgow.

STERILE ABSCESSES FOLLOWING THE USE OF TUBERCULIN.

BY DUNCAN FORBES, M.D. EDIN., D.P.H. CAMB.,
AND
CYRIL BANKS, M.B., B.S. LOND.
(*From the Public Health Department, Brighton.*)

RECENTLY tuberculin has become widely used in the treatment of pulmonary tuberculosis. One or other of many preparations is used and at times considerable doses are given. For the first seven months of 1911, for Brighton municipal work, the preparation T.R. was used. To a few patients, large does of ½ to 1½ mgm. were given with no formation of abscess. Since August the preparation B.E. has been used in gradually increasing doses. As it happened, a considerable number of patients reached large doses about the same time, and 13 of these developed cold abscesses.

Dose followed by abscess.—12 of these 13 patients had received 1/5, 1/10, or 1/20 mgm. at the abscess sites; the thirteenth had only received 1/50 and 1/40 mgm.

Time between injection and abscess.—The times which elapsed between the injections and definite abscess formation were usually two to three weeks, but in some cases the interval was longer, in one case being as much as nine weeks.

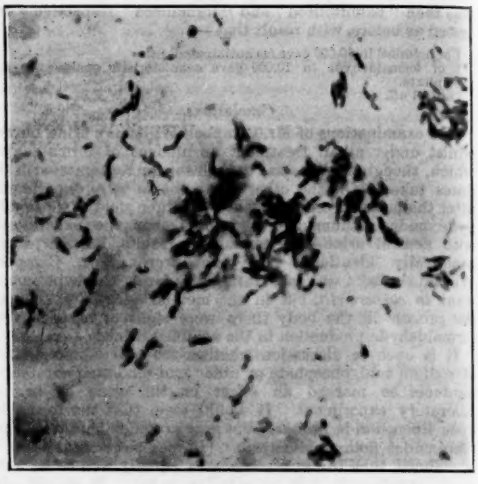
Effect on the general health.—Fortunately, the formation of abscess, its consequent evacuation, and the slow healing up of the abscess cavity seemed in no way to affect the general health of patients. Workmen with abscesses on their arms were able to continue to do heavy work, which did not seem to interfere with the healing process.

The cause of the abscesses.—Pus drawn from the abscesses before they had pointed showed no other organisms than tubercle bacilli. Tubercle bacilli in such pus might have been derived from the patient.

Stained preparations from the stock bottle and dilutions of the bacillary emulsion which caused the abscesses showed no other organism than tubercle bacilli. A large majority of these bacilli appeared to be intact. Injection into guinea-pigs of both pus and the stock preparation of B.E. did not give rise to tuberculosis or sepsis. The abscesses were due, not to living tubercle bacilli or septic organisms, but to *the irritation caused by the non-absorption of dead tubercle bacilli.* (See figure.)

The reason why this special preparation of B.E. produced abscesses.—On comparing another preparation of B.E. with samples from the abscess-producing B.E. the appearance was quite different. In the former small rounded masses, evidently parts of broken-up bacilli, were found; in the latter unaltered tubercle bacilli. In this instance we suggest that the abscesses were due to insufficient grinding of the tubercle bacilli used.

The lesson seems to be that B.E. should always be carefully examined microscopically before use, in order that any preparation in which the tubercle bacilli have been improperly ground may be discarded. It is true that after



Photomicrograph of film from abscess-producing preparation of B.E. × 2500.

doses of less than 1/50 mgm. of an improperly ground preparation no abscess may follow, but in such cases small nodules persist for long periods, the tubercle bacilli not being absorbed.

For bacillary-substance-inoculation T.R. appears to be a safer preparation than B.E. In the preparation of T.R. tubercle bacilli are first ground, thereafter distilled water is added, and the mixture is centrifuged. The upper fluid, T.O., is discarded; the deposit is dried, re-ground, again mixed with water, and centrifuged; the supernatant fluid is, however, preserved. The process is repeated again and again until no deposit remains, the various supernatant fluids, with the exception of the first (T.O.) being mixed together to form T.R. In the preparation of B.E., the bacilli are pulverised, but not to the same extent as is the case in the preparation of T.R. The repeated grinding of the latter makes it readily absorbable and thus removes any risk of abscess.

Sterile tuberculous abscesses seem to have no bad effect on the general health of patients. Their formation, however, discredits tuberculin treatment and, especially in an out-patient department, is a cause of great anxiety.

Risk of abscess has led us entirely to discontinue the routine use of B.E. It has also impressed on us the advantages of the finely-ground, and therefore easily absorbed, preparation T.R.

Brighton.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON).—Scholarships of the value of £60 per annum for three or five years, and £30, will be awarded on the result of an examination to be held on May 28th and following days, for the course of medical study beginning October next. Forms of entry must be sent before May 21st to the Secretary and Warden, 8, Hunter-street, Brunswick-square, W.C., from whom all particulars can be obtained.

THE HÆMO-RENAL INDEX.

BY OTTO GRÜNBAUM, M.D. CANTAB., D.SC. LOND., F.R.C.P. LOND.,

ASSISTANT PHYSICIAN, LONDON HOSPITAL.

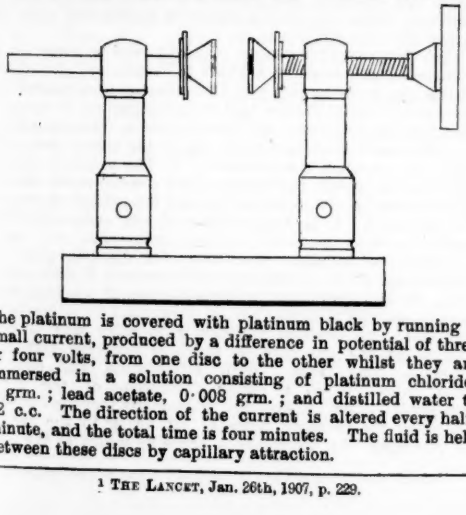
SEVERAL months ago I delivered a lecture in which I referred to the hæmo-renal index. Since then I have had a number of inquiries as to the actual method which I used in estimating this index, and this is my reason for referring to a subject which is by no means new.

The quantity of inorganic salts in the urine in the normal individual taking ordinary mixed diet is approximately twice the quantity contained in the blood. The ratio of the quantity of inorganic salts in the urine to the quantity of inorganic salts in the blood goes by the name of the hæmo-renal index. Much doubt has been thrown upon the value of this index, and many have expressed the opinion that its estimation does not pay for the time and trouble expended upon it. With suitable apparatus the time taken to determine the index is less than five minutes, and this contrasts favourably with the hour and a half which was occupied in carrying out the observation by cryoscopy with the Beckmann's freezing apparatus.

The electric conductivity of an aqueous solution depends upon the number of electrolytes it contains, and therefore upon the quantity of salts; and an accurate estimation of the hæmo-renal index may be obtained by comparing the electric conductivity of urine and serum. The conductivity of a fluid is taken as the reciprocal of the resistance. It is essential to use serum and not blood, because the red cells are non-conductors of electricity, and therefore a variation in their number may lead to errors. The apparatus required to measure the electric resistance of fluids will be found in almost every physical laboratory, but since one has to work with very small quantities of fluid it will be found necessary to modify the ordinary apparatus to a certain extent.

Dr. Dawson Turner[1] in 1907 described the method upon which only 5 c.mm. of freshly drawn blood were placed between two cup-shaped electrodes, 3 mm. in diameter, coated with spongy platinum, and fixed at 2 mm. apart. He says: "By employing electrodes of fixed diameter and at the same distance apart, and the same quantity of blood for each observation, and by making the measurement at once before such changes as coagulation or evaporation could occur, fairly consistent results were obtained. Still, as in all blood-measuring operations, practice and the personal equation come in."

For the last five years I have used a somewhat different method. The fluid the electric resistance of which is to be estimated is placed between two discs fixed about 1 mm. apart. These discs consist of pieces of ebonite 1 cm. in diameter, into the centre of which is inserted a disc of platinum 3 mm. in diameter. The platinum is connected by a piece of metal with the columns supporting the pieces of ebonite (see figure).



The platinum is covered with platinum black by running a small current, produced by a difference in potential of three or four volts, from one disc to the other whilst they are immersed in a solution consisting of platinum chloride, 1 grm.; lead acetate, 0·008 grm.; and distilled water to 22 c.c. The direction of the current is altered every half-minute, and the total time is four minutes. The fluid is held between these discs by capillary attraction.

[1] THE LANCET, Jan. 26th, 1907, p. 229.

An experiment to show that no error is introduced by varying the quantity of fluid in the cell is shown by the following readings, which were obtained with a solution of salt approaching normal saline: 20 c.mm. of the solution, 70 ohms; 30, 40, 50, 60, 70, 80, 90, and 110 c.mm., in each case 36 ohms. The last reading was after a drop had fallen from the cell.

Of course, one realises that the temperature of the fluid is a very important factor; but since the ratio of conductivity is between the resistance of the urine and serum, so long as the two observations are made at the same temperature, it will not cause any error. One must remember, however, that if a considerable current is sent through the fluid a rise of temperature will result, and therefore the minimum amount of current should be used for carrying out the observation.

There are several details that are essential in collecting the blood and the serum, and without due attention to these the hæmo-renal index is valueless. For convenience these may be tabulated: 1. The patient must be on the ordinary mixed diet, and not on one specially designed for disease of the kidneys, which is usually poor in sodium chloride contents. 2. The patient must not take any large quantity of fluid shortly before the samples are collected. 3. The sample of urine and a sample of serum must correspond—that is to say, if the sample of urine is secreted during a time such as between 11 and 12 o'clock, then the sample of blood must be taken at 1 o'clock. Inattention to these details has led to results which have proved fallacious.

Messrs. Schall and Co. made the cell for me, and I have to thank them for the illustration. The resistance between the two platinum discs is measured by a modification of the Wheatstone's bridge suggested by Kohlrausch. This is obtainable from any makers of electric instruments. The one I happen to use was made by Hartmann and Braun, of Frankfort.

Portland-place, W.

THE PREPARATION OF A BRONCHITIS VACCINE:

A METHOD OF RAPIDLY OBTAINING A PURE CULTURE FROM SPUTUM.

BY W. E. M. ARMSTRONG, M.A., M.D. DUB.,

ASSISTANT IN THE INOCULATION DEPARTMENT, ST. MARY'S HOSPITAL, PADDINGTON, W.

THE obtaining of the causal organism in a pure state for the purpose of preparing a bronchitis vaccine is often a matter which involves trouble and delay. The difficulty is largely due to the fact that the bronchial secretion in its passage from the lung to the sputum-pot has necessarily passed through the mouth and become contaminated with the organisms which are the natural inhabitants of that cavity. These mouth organisms are often numerous, and more often than not present a much more luxuriant growth upon artificial media than do the lung microbes which it is the special object of the vaccine therapist to cultivate.

These adventitious microbes may be largely or entirely eliminated *ab initio* by making use of the following process.

An ordinary tea-strainer (price 1*d.* at any grocery store) is taken, sterilised in the flame, and in its wire-mesh cavity is placed a portion of the sputum from which it is desired to grow the offending organism. The strainer is then held under the tap and a stream of water allowed to impinge forcibly upon the sputum. As, however, the average water-tap supplies too large a volume of fluid when much pressure is turned on, it is a good thing to fit the tap with a short rubber hose, the free end of which can either be fitted with a glass nozzle of reduced size or else constricted with the fingers in such a way as to diminish the volume and increase the force of the stream of water. The mechanical violence of the water will rapidly peel off and sweep through the meshes of the strainer the outward salivary wrappings of the sputum with the microbes contained therein, and this effect will also be contributed to by the superior solubility of the salivary portion to that of the more gelatinous bronchial mucus. This washing is continued until the greater part of the original mass has been driven through the strainer, and only true bronchial material remains behind. This remnant is then broken up with a sterile glass rod, and cultures are

taken from its central parts with a platinum needle in the usual manner.

As the bacteria of tap-water do not grow at incubator temperature the subsequent cultures are not contaminated by them. After use the strainer can be disinfected by immersion in a dish of lysol solution, being afterwards washed and dried, or else it may be held in a retort-holder and the remains of the sputum burned away by the application of the Bunsen flame.

By means of this simple technique the writer has sometimes been able to obtain the first culture from a specimen of sputum in so pure a state that the desired vaccine could be prepared forthwith from the first insemination, without the necessity for making even one subculture.

Devonshire-place, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Exhibition of Specimens.—Ganglion Neuroma of the Mesentery.—Embryotomy after Version for Placenta Prævia.—Extra-peritoneal Cæsarean Section.—Acidosis in Pregnancy.

A MEETING of this section was held on May 2nd, Dr. HERBERT R. SPENCER, Vice-President, being in the chair.

Dr. A. H. N. LEWERS showed a specimen of Broken Glass Catheter removed from the Bladder.

Dr. C. LOCKYER showed a specimen of Uterus removed after Utriculoplasty.

Dr. MACNAUGHTON-JONES read a short communication, including details of a case on which he operated for abdominal tumour, but which proved to be a Ganglion Neuroma of the Mesentery. The patient was aged 18, and the tumour was first discovered when she was five years old. From time to time various opinions were obtained as to its nature and the feasibility of its removal, but the views with regard to this were most unfavourable. The patient came under the care of Dr. H. Beckett-Overy (to whom Dr. Macnaughton-Jones was greatly indebted for this interesting case) in April, 1911, and was again seen with him in consultation with Dr. Macnaughton-Jones in the following July. The tumour was then rather rapidly increasing in size, and in December extended to the left side from a few inches above the umbilical line to midway between the umbilicus and the pubes. It was decided to remove it. It was not painful, the only symptoms being constipation and sickness. On Dec. 30th the operation took place. The tumour was situated between the layers of the mesentery, and was attached by some 9 inches through the root of the latter to the vertebral column. There was rather severe hæmorrhage during its final delivery. The patient ultimately made a good recovery, and in April was reported as having walked three miles. Dr. R. Drummond Maxwell pronounced the microscopical features to be those of a true ganglion neuroma of an unusually large size. Such tumours, first described by Virchow, were extremely rare, and Dr. Macnaughton-Jones could find no record of one in this situation. An interesting clinical fact was the extreme mydriasis, which continued for some time after the removal of the tumour.

Dr. LOCKYER read a communication on Embryotomy after Version for Placenta Prævia. He was asked by Dr. C. F. Hardie, of Barnet, to see a patient suffering from ante-partum hæmorrhage. He arrived at 1.30 A.M., and found on examination the placenta overlapping the os, which admitted two fingers. The vertex could be felt in front of the edge of the placenta. Hæmorrhage occurred somewhat freely during examination, so an anæsthetic was given, and with some difficulty bipolar version was performed, and the half breech brought down, after which further hæmorrhage ceased. It was obvious from the presenting leg that the child was strong, large, and well formed. Traction was made on the leg for two hours, but the cervix was very resistant. After traction had been continued for one and a half hours the fœtus made a violent convulsive movement, and then the leg became pale and flabby, indicating that the child had died. As the cervix still would not yield Dr. Lockyer now decided to reduce the size of the fœtal breech by incising the pelvic bones with stout, curved scissors. With difficulty the breech, and subsequently the shoulders and head, were delivered. The placenta was expelled spontaneously. The vaginal mucous membrane escaped laceration, but the perineal body and skin sustained a A-shaped tear, the apex of which was at the fourchette, and the two limbs of which diverged to either side of the anus. The patient made an uninterrupted recovery. The fœtus weighed 9 lb.

Dr. A. W. RUSSELL (Glasgow), in a paper on Extra-peritoneal Cæsarean Section, said that the paper by Dr. E. H. Tweedy[1] and his own paper[2] described with sufficient detail two of the leading varieties of this operation, Döderlein's and Tweedy's, and attempted to fix the scope of the operation. A third variation was the method adopted by Dr. Russell in all his cases. Pfannenstiel's transverse and slightly crescentic incision just above the symphysis pubis was employed. This flap was reflected from the surface of the muscles, and the latter were then separated in the middle line. The bladder was distended with six to 10 ounces of sterile saline solution, so as to make its contour prominent, and was then separated from the anterior wall of the cervix. The bladder was emptied and held aside, so as to allow median longitudinal incision of the lower segment of the uterus, and the infant was extracted. In the seven cases reported in this communication Dr. Russell included one case in which he attempted to do this operation, but owing to the bladder when filled not rising above the brim the peritoneum had to be incised and the classical operation was performed. This patient was again admitted under the care of Dr. Munro Kerr a month ago, and the child was delivered by the ordinary Cæsarean section. Except for a few peritoneal adhesions there was no sign of the previous operation. The other six cases were deliberately arranged and completed as extra-peritoneal Cæsarean sections. These seven patients had all of them pelvic deformity; they were all more or less advanced in labour; they had all been handled, and two of them had a raised temperature at the time of the operation. The patient who died as the operation was being completed was a case in which, owing to the fœtal heart being reported to be irregular and feeble, the patient was submitted to the full test of labour in the hope that the cervix would dilate and moulding of the head take place. When some hours later the fœtal heart was found by Dr. Russell to be regular and strong, the extra-peritoneal operation was decided upon, and but for the accident of the anæsthetic the patient would have done well. Extra-peritoneal Cæsarean section was not an alternative for the ordinary classical operation. It should be reserved for cases advanced in labour, with the lower uterine segment stretched over the advancing head or impacted shoulder, and for certain cases of placenta prævia, the child being alive. The great advantage was the added scope given by this method for saving the life of the child as well as of the mother, seeing that this operation was possible in many cases where the ordinary Cæsarean section could be undertaken only with grave risk of septic infection.

Dr. WALTER C. SWAYNE (Clifton) read a paper on the Clinical Significance of Acidosis in Pregnancy, of which the following is a summary: 1. The existence of albuminuria in pregnancy should always lead to investigations to ascertain the presence or absence of diacetic acid and acetone, and in certain cases, if these are absent, to the calculation of the urea and ammonia nitrogen ratio. 2. The presence of albuminuria being one indication of the pre-eclamptic state, if diacetic acid and acetone are present the indication so given is confirmed. 3. In the presence of any symptoms which indicate the presence of a pregnancy toxæmia—e.g., severe vomiting or ptyalism—the tests for diacetic acid and acetone should be applied, and urea ammonia N ratio worked out. 4. The presence of acidosis in cases of vomiting is due not to starvation alone, but in great part to a pregnancy toxæmia. Its constant presence in ptyalism may be questioned, as the one case in which it occurred may have been a coincidence. With albuminuria and deficient urea output it is a strong indication of the "pre-eclamptic" state. 5. Acidosis, as generally found in diabetes, indicates the breaking down of fat owing to the absence of glycogen. In pregnancy it probably indicates the same

[1] Journal of Obstetrics and Gynæcology of the British Empire.
[2] Practitioner.

thing, but administration of glucose neither prevents it altogether nor leads to excretion of sugar in the urine.

LARYNGOLOGICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on May 3rd, Dr. STCLAIR THOMSON, the President, being in the chair.

Mr. W. DOUGLAS HARMER and Dr. H. LEWIS JONES gave a demonstration of Treatment of Malignant Growths of the Mouth and Pharynx by Diathermy—a process of heat-coagulation of tissues by means of a high-frequency current suitably modified for the purpose. Several cases illustrating the beneficial action of the method were exhibited.

The following cases and specimens were shown:—

Mr. W. STUART-LOW: 1. A man unusually tolerant and easy of laryngeal examination, in whom it was possible to see the larynx without holding the tongue. 2. A man with Chronic Loss of Voice. The epiglottis was reduced to a stump, and the ventricular bands and vocal cords had been deeply eroded.—The PRESIDENT looked upon the disease as lupus, and remarked that the date of onset of hoarseness, depending as it did upon the date of infection of the vocal cords, was no criterion as to the actual duration of the disease.

Dr. A. S. COBBLEDICK: A case of Double Ethmoidal Mucocele. With regard to treatment, the general opinion was that such cases should be treated by the intranasal route.

Dr. H. LAMBERT LACK: A Boy with Chronic Œdema of the Fauces and Larynx, which had shown no alteration in the five years he had been under observation. Sir Felix Semon held that the term "chronic œdema" was inappropriate to conditions such as this, since pathological examination revealed nothing but round-cell infiltration; and inasmuch as the swelling might recede the alternative term which had been proposed, "sclerotic hyperplasia," was also inapplicable. The exhibitor believed the lesion to be of syphilitic origin, a view which was supported by a positive Wassermann reaction.

Dr. D. R. PATERSON (Cardiff): Sarcoma of the Thyroid Perforating the Trachea. Death had occurred as a result of Hæmorrhage into the Trachea.

Dr. G. WILLIAM HILL demonstrated the facility with which the larynx could be intubated by a long bronchoscopic tube passed through his direct laryngeal tube.

Dr. N. D. BARDSWELL: Case of Laryngeal Stenosis probably due to tuberculous infiltration.

Mr. NORMAN PATTERSON showed another of his cases of Malignant Disease of the Pharynx and Tongue (in a man aged 56). The patient had been successfully operated on two years ago; so far no recurrence had been observed.

Mr. G. SECCOMBE HETT: A case of Tubercular Laryngitis undergoing improvement. Mr. Hett also showed a case of Laryngo-fissure for Intrinsic Carcinoma affecting the left vocal cord and anterior commissure. The voice had not returned since the operation, and this the exhibitor and other speakers thought might be remedied by vocal exercises.

Mr. THOMAS GUTHRIE: Guillotine for Enucleation of Tonsils by Sluder's Method.[1]

Mr. CYRIL A. B. HORSFORD: A case of Laryngeal Stenosis due to syphilitic infiltration, improving under iodides and mercury.

Mr. G. J. JENKINS showed a rare Epignathus or Teratoid Tumour of the Nasal Septum and Base of the Skull in a living child, aged 1½ years, with cleft palate.

The PRESIDENT related the case of a patient who had worn a Tracheotomy Tube for 50 years without obvious injury to health.

Mr. SECCOMBE HETT also showed the following cases:—1. A case of Laryngeal Tuberculosis in a man aged 34 years. 2. A woman, shown at a previous meeting, with a Cyst of the Right Ventricle. The cyst had been removed, but the voice remained hoarse, a symptom which, according to several members, would disappear in time.

Dr. ANDREW WYLIE: A case of Specific Ulceration of the Tongue, Nasal Septum, and Larynx. The tongue showed an area of hardness which had raised suspicions of malignancy.

Dr. G. W. HILL: Skiagrams illustrating Successful Treatment of Non-malignant Stricture of the Gullet.

[1] THE LANCET, May 4th, 1912, p. 1206.

Dr. DAN MCKENZIE: A case of Bilateral Œdema of the Ethmoidal Septum associated with nasal sinus suppuration.

Dr. H. W. FITZGERALD POWELL and Dr. L. COLLEDGE: Fixation of the Left Half of the Larynx in a woman.

Dr. J. MIDDLEMASS HUNT (Liverpool): Bony Growth of Nose and Naso-pharynx in a woman aged 44, in which there was suspicion of malignancy.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

Children's Mortality from Non-notifiable Infectious Disease.—The National Insurance Act.

A MEETING of this section was held on April 12th, Mr. M. J. NOLAN, the President, being in the chair.

Sir JOHN MOORE, in a paper on Non-notifiable Infectious Diseases as a Cause of Mortality in Childhood, with Suggestions for their Control, quoted statistics from the Annual Report for 1910 of the Registrar-General for Ireland to illustrate the high death-toll levied on child life in Ireland by measles, whooping-cough, influenza, diarrhœal diseases, and pneumonia—not one of which acute infections was notifiable. The total mortality from pneumonia was 6·59 per 1000 births among children under one year; from measles, 1·95; whooping-cough, 6·07; influenza, 0·69. Adding these to the figures for diarrhœal diseases (12·24) in 1910—a comparatively healthy year—these non-notifiable acute infective diseases together caused the deaths of 27·54 infants under 12 months old among every 1000 children born. As the total death-rate from *all causes* of infants under one year old was 94·62 per 1000 births in 1910, the non-notifiable acute infective diseases in question were responsible for 29 per cent. of the high infantile mortality of Ireland in that year. As remedies Sir John Moore advocated (1) the extension of the principle of notification as laid down in the Infectious Diseases Notification Act, 1889; (2) forbidding the admission of children under 5 years of age to schools; (3) the introduction into Ireland of systematic inspection of schools; and (4) the appointment of female sanitary inspectors by all urban and rural sanitary authorities under the provisions of Section 11 of the Public Health (Ireland) Act, 1878.—The PRESIDENT said that permissive legislation in medical matters ought to be abolished, especially with regard to notification of infectious diseases. He agreed with Sir John Moore that children should not be sent to school before the age of 5.—Sir WM. THOMPSON (Registrar-General) pointed out that Pembroke was the only district in Ireland where notification of measles was compulsory, and the death-rate in that district from the disease was very much lower than in others. Referring to measles in Belfast, which caused so many deaths, the local authorities should point out the seriousness of measles, and the matter should not be left altogether in the hands of parents and the Government. The medical inspection of school children also was of much importance.—Dr. T. P. C. KIRKPATRICK pointed out that measles, some time ago, was a notifiable disease, but, as a result of the experience obtained, it had been given up on the ground that notification had failed to be of any use. Until medical officers of health took steps to put a stay on measles it would not be right to ask local authorities to spend money on notification.—Dr. J. M. DAY thought it wrong to attribute all these deaths to measles. Measles was the scavenger disease of a city, and if the children from unions were considered the death-rate amongst these was about ten times as high as amongst other children of the very poor because they suffered from chronic syphilis and tuberculosis, yet when measles broke out amongst them their deaths were registered as from measles. He thought notification would not effect an improvement. Children were sent to school, so that mothers might have more time for household duties. If the schools were closed the young children were sent to crèches, thus no improvement was brought about. He could not see what use it would be to notify cases of pneumonia, as there was little evidence that many cases were contracted by contact.—Sir JOHN MOORE replied.

Dr. ROBERT J. ROWLETTE read a paper on the National Insurance Act and State Medicine. Having sketched the general principles of the Act as it is applied to Ireland, he

discussed its probable effects on—(1) medical practice; (2) public health; (3) the voluntary hospitals. He regarded it as an advantage that medical benefits were withdrawn from the scheme as far as Ireland was concerned. Any advantage the Poor-law service might have gained from the inclusion of medical benefits would have been transitory. The scarcity of funds and the inexperience of most of the friendly societies operating in Ireland were a guarantee that for some time at least no attempt would be made to give the medical benefit as an additional benefit or independently of the Act. There were many good points in the Act from the point of view of the sanitarian. The worker would not be in want during illness. The liberty given in the administration of the "sanatorium benefit" was very wide. The benefit might be applied in institutions other than sanatoriums—for instance, in isolation hospitals for incurable cases. The Insurance Committees had large powers in an educational direction, which they should be made to use. The Insurance Commissioners, the Insurance Committees, and the approved societies should be encouraged to use all their powers in regard to employers and local authorities in cases of excessive sickness in any district. The organisation of county societies, or societies with a strong local interest, should be encouraged. Dr. Rowlette suggested that insured persons should not be received into hospital unless at least a part of the cost of their maintenance was guaranteed. The maternity benefit might act so as to prevent women being attended in confinement in either department of the maternity hospitals, to the destruction of the teaching of practical midwifery.—Dr. H. JELLETT said, with regard to the extra expenditure, that hospitals would have to pay for their staff and probationers, but the Commissioners were considering whether the paid staff of the hospitals should be looked upon as inmates of charitable institutions. However, when these inmates left the hospital a payment would have to be made to restore them to the status that they would have had had they not been in the hospital, and hospital governors must consider whether such sums would not be greater than the ordinary insurance. Probationers could possibly be regarded as apprentices not in receipt of wages. As to maternity benefits, he questioned Dr. Rowlette's statement. The Act said, "The benefits shall be paid in part or in whole to his dependents"; therefore the benefits were the husband's, and could be paid to his dependents. This was important, as most patients coming into maternity hospitals would come as the wives of insured persons, and if it was impossible to pay the maternity benefit to the family unless they were their direct dependents women would not enter hospitals. He had made two suggestions which, if carried out, would be a great advantage: 1. That the maternity benefit should in all cases be paid to the dependents of the husband of the patient. This would prevent the woman staying out of hospital. 2. In Ireland, as there are no certified midwives, any woman attended by the students or pupil midwives of a hospital under the supervision of the officers of the hospital should be regarded as attended by a registered medical practitioner. Another point of importance was that as there was no medical benefit in Ireland certification must be given by some other means than by the doctor who attended the case; but there did not appear to be any provision for attendance at a hospital and getting a certificate. This would draw off a number of patients from the hospitals and send them to the Poor-law medical officers.—Mr. G. R. S. STRITCH regretted that the medical benefit did not apply to Ireland. Everybody who must be insured would join an approved society. These societies would only pay a capitation rate of 5*s*., including drugs, to cover attendance on the whole family, whereas under the Act there might be several contributors out of the one household. He was of opinion that hospitals would not suffer, as the medical benefit did not apply to Ireland.—Dr. ROWLETTE, in reply, said he hoped his reading of the clause referred to by Dr. Jellett was incorrect, as it would be a matter of much importance that Dr. Jellett's reading should be upheld. He differed from Mr. Stritch as to the advisability of medical benefit applying to Ireland.

ULSTER MEDICAL SOCIETY.—A meeting of this society was held at Queen's University, Belfast, on May 9th, Dr. H. L. McKisack, the President, being in the chair.—An interesting discussion took place on Diphtheria and Diphtheria Carriers. Professor W. St. C. Symmers, who introduced the subject, referred specially to the value of fresh solutions of urea as a topical application in diphtheria. He had found experimentally that all bacilli perished in a urea solution, and he was in this way led to recommend its application in diphtheria, in which it had been found successful.—Dr. W. J. Wilson spoke of the fact that in presence of other organisms in the throat—such as streptococci, &c.—the true diphtheria bacilli lessened in number. He suggested the use locally of glucose tablets for cases recovering, because it lessened the virulence of the toxin and tended to increase the growth of non-specific organisms.—After Dr. C. Dickson and Dr. A. G. Robb had discussed the question of laboratory and clinical diagnosis, Sir John Byers urged that those sending swabs, sections of tissue, &c., to pathologists for an opinion should send also some clinical history of the cases. The ideal plan would be to have clinical pathologists associated with the surgeons, physicians, and specialists, so that a combined clinical and bacteriological diagnosis could be made.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the Royal Devon and Exeter Hospital on April 19th, Dr. R. V. Solly, the President, being in the chair.—Mr. C. E. W. Bell reported the following cases: 1. Removal of the Gall-bladder. A woman, aged 51, was admitted to the Royal Devon and Exeter Hospital in October, 1910, for a tumour, apparently of pelvic origin, and occupying the right lumbar and iliac regions. The hospital records, however, showed that on a previous admission in 1906 there was an obvious tumour of the gall-bladder, for which she refused operation. In the interim there had been neither sickness, pain, nor jaundice. The abdomen was now opened, and a cyst as large as a fœtal head and having the cystic duct for its pedicle, was found, with a calculus ulcerating through the duct. The gall-bladder was removed and was found to contain clear mucus and two gall-stones. Complete recovery ensued. 2. In a woman, aged 44, a Calculus was found in the cystic duct, passed up into the gall-bladder, and subsequently recovered through a small incision. 3. A groom, aged 21, was admitted to hospital with a history of having been kicked in the lower abdomen by a horse some five months previously. A swelling was noted one week prior to admission. It occupied the right hypochondriac, epigastric, and umbilical regions. A suppurating hydatid cyst was diagnosed. The liver was explored with a trocar through an incision in the middle line and pus being found the abscess was drained and the man made a good recovery. Staphylococci were the only micro-organisms found.—In the discussion Mr. Russell Coombe considered Case 1 interesting on account of the history, which showed that the cyst had enlarged instead of contracting with age.—The President suggested hæmatoma as the most probable origin of the abscess in Case 3.—Mr. Bell replied.—Mr. J. Brennan Dyball read notes on five cases of Intestinal Obstruction. 1. The patient was an old lady, aged 72, with mitral incompetence and a greatly dilated heart, who gave signs of an acute obstruction high up in the small intestine. Her general condition augured ill for the success of the operation. On opening the abdomen a hard mass was found within the small intestine and removed. It consisted of four large cholesterin gall-stones cemented together and thickly covered with inspissated mucus and fæcal material. She ultimately recovered. 2. A spinster, aged 82, in whom obstruction had come on some three weeks after an attack apparently of biliary colic. Operation showed the obstruction to be due to a dense band running from the root of the meso-appendix across the last inch of the ileum to the root of the mesentery. There was no gangrene. Though the operation was of short duration and the patient's condition satisfactory at its close, an unaccountable collapse set in after three hours, and she died six hours after operation. Case 3 related to a hemiplegic woman, aged 73, in whom two days after the onset of obstruction the abdomen was enormously distended. Operation revealed a volvulus of the sigmoid. The loop was punctured with liberation of gas and the twist released, but the woman died within 24 hours of the operation. Cases 4 and 5 were cases of obstruction following upon operations for appendix abscess. In Case 4, a boy of 8, 30 days after the first operation urgent symptoms of obstruction followed upon periods of transient colicky pain. The old incision was opened and an adherent knuckle of collapsed small intestine freed, but the true cause of obstruction was found to be

a V-shaped adhesion of small intestine to the abdominal wall at the upper part of the incision. The freeing of both loops was fraught with difficulty and the released bowel was not in a condition for being returned to the abdomen, so both pieces of bowel—the upper measuring 8 inches and the lower 2 inches—were resected. In the first instance lateral anastomosis, and in the second end-to-end union, was employed. The boy rallied and made an excellent recovery. Case 5 was a single lady, aged 35, operated on some nine months previously, in the early stage of an acute attack of appendicitis. There was a little pus found, but the appendix was not reached at operation, and the wound healed on the tenth day. Colicky pains had, however, been experienced off and on since the primary operation. When called to her there were evident signs of early obstruction. On operation a dilated coil of ileum, across which ran a broad thin band of adhesions, was found; this and a similar one lying an inch or so below were resected. What appeared to be remains of a Meckel's diverticulum, running from the free edge of the ileum to the mesentery, also dragged upon the bowel and was resected. The appendix was removed, and it was then noted that the cæcum remained collapsed. This led to a further search, when a loop of ileum was found to run down into the pelvis and to be firmly adherent there. The loop was freed after considerable trouble. The patient made a good recovery.—The President, Mr. R. Worthington, Mr. Bell, and Mr. Coombe discussed the cases, and Mr. Dyball replied.—The President showed the following pathological specimens: Macroscopic—(1) Stomach, the seat of carcinoma; (2) Heart, with extreme calcification of the mitral and aortic orifices, and in connexion with the same thrombosis of the mesenteric artery and infarcted spleen and kidney. Microscopic—(1) Anthrax Spores; (2) Pneumococci from a case of Acute Leptomeningitis; (3) Hæmatosiderosis from a case of Pernicious Anæmia.

WIGAN MEDICAL SOCIETY.—A meeting of this society was held on April 17th, Mr. F. L. Angior, the President, being in the chair.—The President read a paper on the Value of Suprarenal Extract in Addison's Disease. After a general survey, historical, physiological, and pathological, in which he expressed his belief in the adrenal inadequacy theory of the causation of the disease, he read notes of cases in his own practice and of others which had come immediately under his notice. Case 1 was a middle-aged man, father of three healthy children, with no phthisis or tubercular history, who complained of pain and tenderness in the back and of weakness. On examination he was found to have a very compressible pulse, considerable muscle weakness, various pigmented areas on the skin and buccal mucous membrane, and he had had several attacks of syncope. Under treatment with tonics, nux vomica, &c., there was no improvement, but he began to improve shortly after being put upon 6-grain doses of suprarenal extract three times a day, with complete rest in bed at first, and good feeding. After a time he returned to work, and later still relinquished his medicine. Some months later, following some extra trouble and anxiety in his business, he again got symptoms of heart failure, but was soon picked up again by the extract. Case 2 was another man, with no history of phthisis; the usual symptoms were present. Pigmentation was much more prominent than in the first case. Here also there was improvement, and the man is at present under treatment. Case 3 was still another man, aged 48. Again there was no history or signs of phthisis. Gastric symptoms and syncopal attacks were a leading feature, and also some pigmentation. This case is under treatment and improving steadily. The speaker next turned to cases he had seen at the Stanley Hospital, Liverpool. One group contained a mother, son and daughter, all under treatment at the same time, the mother getting up to 20 grains of the extract three times a day. He mentioned one case in which sudden death had occurred on the patient sitting up in bed. Also that he had been able to attend post-mortem examinations in two cases where the only discoverable lesion was some fibrous degeneration of the suprarenal glands.—Dr. F. Rees congratulated the President, but pointed out the danger of long-continued use of suprarenal extract, which he thought would produce arterio-sclerosis.—Mr. T. Campbell strongly advocated the nervous theory of origin. He said that arterio-sclerosis could not result from this form of treatment as the extract was not absorbed owing to its action on the gastric blood-vessels. He also mentioned the exhibition of suprarenal extract as a means of diagnosis—3 grains three times a day for three days. If the blood pressure was raised thereby the case was Addison's disease (Langdon Brown).—Dr. R. P. White and Mr. M. G. McElligott emphasised the very great difficulty of diagnosis from diseases such as neurasthenia, some forms of plumbism, early phthisis with abdominal symptoms, &c.—Dr. F. E. Wynne, Mr. E. H. Monks, and Dr. M. Benson also spoke, and the President replied to questions raised and to a vote of thanks for his paper.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held on May 9th, Dr. H. J. Macevoy, the President, being in the chair. The following cases were shown:—Dr. F. Langmead: Enlarged Superficial Abdominal and Thoracic Veins.—Mr. D. C. L. Fitzwilliams: (1) Spontaneous Fracture due to Gumma; and (2) Result of Old Injury to the Lower Epiphysis of Humerus.—Mr. A. H. Gosse (for Dr. W. H. Willcox): (1) Tabes; and (2) Diabetes and Suppurating Myositis.—Mr. V. Z. Cope: (1) Two cases of Fracture of the Os Calcis; and (2) Case of Chronic Intestinal Obstruction.—Dr. G. de B. Turtle (for Mr. E. Laming Evans): Syphilitic Disease of Both Knee-joints.—The cases were discussed by Mr. Fitzwilliams, Mr. Cope, Dr. Langmead, Mr. L. B. Rawling, Dr. D. W. Carmalt-Jones, Dr. Turtle, and Dr. W. M. Davson.

NEW LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held on May 9th, Dr. Alfred Eddowes being in the chair.—Dr. R. W. Brimacombe showed a young Indian woman with a Lesion upon the Right Ear of two years' duration, clinically resembling Delhi boil. The suggestion of possible malignancy was put forward by some of the members.—Dr. David Walsh showed: 1. A man of 55, with Leucoderma, who also presented signs of Addison's disease. 2. A microscopic section from the case shown by him at the previous meeting of an Infiltrated Lesion upon the Chest Wall, which revealed typical tuberculous structure.—Dr. Tom Robinson showed a man with Late Syphilis of the Tongue who was an inveterate smoker. The primary disease was contracted 23 years ago and the thickened white patches now affected the buccal mucous membrane in addition to the tongue.—Dr. G. Norman Meachen showed (for Dr. P. S. Abraham): 1. A young woman with Lesions upon the Face indistinguishable from Adenoma Sebaceum, but which microscopically proved to be of an angiomatous character. 2. A case of Lupus Erythematosus affecting the dorsum of the hands in a young woman aged 25. The lesions had left remarkably little, if any, trace of their existence, but there was undoubted superficial atrophy in places, and the margin of the left ear, as well as the malar regions, was suspiciously reddened. 3. A girl aged 14 with Cicatricial Alopecia of five years' duration, somewhat suggesting the condition of pseudopelade of Brocq, except that there was no evidence of folliculitis.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on May 2nd, Mr. Robert Jones, the President, being in the chair.—Mr. G. P. Newbolt showed a female patient, 50 years of age, in whom he had successfully ligatured the first part of the left subclavian artery for aneurysm, 1½ inches of the clavicle having been first removed.—Mr. G. V. Fletcher read a note on the Treatment of Whooping-cough by the Oral Administration of Small Doses of Adrenalin.—Mr. R. A. Bickersteth read a short paper on the Catheterisation of the Ureters and its Uses. He rarely used a general anæsthetic, as with the patient conscious there was less chance of injuring the parts. The catheter was useful as a probe or searcher in aid of the cystoscope—e.g., in villous growth, where the stalk involved the ureteral orifice, and in sacculated bladder. It might be used to obtain specimens of urine from each kidney, but as the catheter was of fine calibre the separator was preferable for this purpose. It was useful in strictures and obstructions in the ureter. The renal pelvis or the ureter could be washed out by its help. It could be used to estimate the degree of dilatation of the renal pelvis and calyces by injecting normal saline solution; the patient felt the same pain when these cavities were filled as in his attacks. In operating it was useful to have a catheter in the ureters for their protection. Mr. Bickersteth showed lantern slides illustrative of various points.—Dr. C. J. Macalister read a

paper on the Æsthetics of Medicine. He spoke of the effect of medicine in increasing beauty, especially by the prevention of small-pox. He quoted Steele in the *Spectator* and Dickens in "Bleak House" as illustrative of the effect of the loss of beauty on the mind. Civilisation was responsible for some defects; desuetude and constitutional disease produced deformity as in the case of the teeth, which suffered from the use of soft starchy food; mothers might be educated in the principles of a dietary. Dr. Macalister alluded to the effect of an outdoor life and fresh air on the children at the Country Hospital for Children at Heswall in increasing the physical beauty of those who were under treatment for any length of time. He thought children in our large towns suffered from the environment of unrest.

Reviews and Notices of Books.

A System of Surgery. Edited by C. C. CHOYCE, B.Sc., M.D. Edin., F.R.C.S. Eng., Dean of, and Teacher of Operative Surgery in, the London School of Clinical Medicine (Post-Graduate), &c. Pathological Editor: J. MARTIN BEATTIE, M.A., M.D., C.M. Edin., Professor of Pathology and Bacteriology, and Dean of the Faculty of Medicine, in the University of Sheffield, &c. In three volumes. Vol. I., with 16 coloured plates, 64 black and white plates, and 250 illustrations in the text. London, New York, Toronto, and Melbourne: Cassell and Company, Limited. 1912. Pp. 957. Price 21*s.* net.

THE appearance of the first volume of a new System of Surgery is always a matter of interest to the surgeon, for in every new treatise there are chapters in which something new may be found. If we may judge of the two volumes which have yet to appear by that which is before us, the editors of the System have been happy in their choice of writers, and the articles have been well supported by good illustrations and excellent printing. The work is designed, we are told, for those practitioners of surgery who wish to keep themselves abreast of the most modern teaching, and for the senior students who wish to obtain a sound and comprehensive knowledge of present-day surgery. Full descriptions of the operations purposely are not included; merely the lines of operative procedures are indicated, and the reader is referred for further details to the more elaborate treatises on operative surgery.

The first article is on surgical bacteriology, by Professor Dryer and Dr. E. W. Ainley Walker, who give a satisfactory account of bacteriology and of our present knowledge of bacterial products. Dr. J. W. H. Eyre contributes a chapter on the therapeutic applications of bacteriology, in which he explains lucidly the theory and practice of serum and vaccine treatments. He discusses the use of the opsonic index in vaccine therapy and agrees that the estimation of the opsonic index is not absolutely essential, provided that careful attention is paid to the clinical signs and symptoms, the temperature, and the local condition; but he insists that in these cases the initial dose should be small.

Professor J. Martin Beattie has written the section on inflammation. He describes carefully the cytology of inflammatory exudates, and he holds that the difference between the cells of one exudate and those of another depends more on the duration of the action of the irritant than on its nature. These descriptions are much assisted by some very good coloured plates. Mr. S. Maynard Smith is responsible for the chapter on the clinical course and treatment of inflammations. It is clearly written but somewhat brief. Professor Beattie's chapter on repair is good, especially in those parts which deal with the mode of healing in special tissues.

The section on suppuration, by Mr. G. Lenthal Cheatle, is good, and it is gratifying to see that he utters a warning against the use of carbolic fomentations on fingers or toes because of the risk of localised gangrene. This risk is so often neglected in works on surgery that we are glad to see it still further referred to also by Mr. C. A. R. Nitch in his article on gangrene. The chapter on wounds and their treatment, by Mr. Choyce and Mr. Gwynne Williams, describes the methods of preparation for operation and the general principles of antiseptic and aseptic surgery, and gives a good description of the usual present-day practice in this country.

The article on military surgery is by Major C. G. Spencer, R.A.M.C. It is rather brief, but probably sufficient for those engaged in civil practice. Mr. A. Chad. Woodward contributes a chapter on burns and scalds, and Mr. Russell J. Howard one dealing with constitutional disturbances associated with trauma. It is satisfactory to find it stated that the temperature of saline fluid for injection into the veins should be from 105° to 110° F., for it is certainly often given at too low a temperature. The important subject of tumours has been allotted to Mr. Raymond Johnson and Mr. T. W. P. Lawrence; the section is clearly written, and presents a difficult subject in an intelligible manner. This article, the longest in the volume, occupies nearly 250 pages.

Professor Arthur Keith gives a short account of the treatment of drowning. He prefers mouth-to-mouth inflation of the lungs for patients up to the age of 5 years. Over that age and up to the age of 40 he thinks Schäfer's method best, and for other cases he considers the Silvester method the most convenient. Professor Beattie's article on examination of the blood and cerebro-spinal fluid is a little short. An important and valuable chapter is that dealing with X ray examination, by Dr. W. Ironside Bruce. It is illustrated by a very large number of striking skiagrams, and it contains just the information needed.

The subject of anæsthesia is treated by three writers—Dr. J. Blumfeld dealing with general anæsthesia, Mr. Gwynne Williams with local anæsthesia, and Mr. Lawrie McGavin with spinal analgesia. Mr. McGavin considers the Jonnesco method of high spinal analgesia to be not unattended with danger, and he looks upon it as still *sub judice*.

Syphilis is dealt with in three chapters, the late Colonel F. J. Lambkin, A.M.S., writing on acquired syphilis, Mr. J. E. R. McDonagh on the congenital disease, and Major T. W. Gibbard, R.A.M.C., and Major L. W. Harrison, R.A.M.C., on salvarsan in the treatment of syphilis. Colonel Lambkin gives a very good account of the use of mercury in the treatment of the disease, especially of the intramuscular method of injection. Major Gibbard and Major Harrison hold that a persistently positive Wassermann reaction is a certain indication for repeating the dose of salvarsan. Mr. McDonagh's article is good and contains all that could be described in so small a space. Mr. C. A. Leedham-Green deals with gonorrhœa and the soft chancre. Dr. C. W. Daniels writes on yaws and some other tropical lesions; Mr. E. Rock Carling on glanders; Mr. Victor Milward on tetanus; and Mr. Philip Turner on anthrax. These chapters are all good. Two other papers merit special mention—viz., Professor Calmette's chapter on hydrophobia including an account of Pasteur's treatment, and Professor Frank Cole Madden's chapter on surgical diseases caused by animal parasites.

This volume calls for nothing but praise.

Die Kolloide in Biologie und Medizin. By Professor H. BECHHOLD. Dresden: Theodor Steinkopff. 1912. Pp. 441. Price, 14 marks; or bound, 15.50 marks.

THE study of colloids is daily assuming greater importance both in practical medicine and in biology. In practical medicine colloidal metals are being used as internal remedies, and may solve the problems of toxicology and pharmacology by the principles of diffusion and osmosis.

In biology an organism is beginning to be regarded as a complex of colloidal systems, immersed in a crystalloid electrolytic solution. A text-book such as this, containing within its 400 pages most of the material necessary for a complete study of the subject, is therefore welcome. Although the discovery and the very name of colloid are due to our own Graham, most of the recent works on the subject have come from German sources, and we know of no book in English that gives a short and yet complete account of recent investigations on this subject. Professor Bechhold, one of the foremost authorities, writes from the Institute of Experimental Therapy at Frankfort-on-Main, and dedicates his book to Professor Ehrlich.

The first part is devoted to the various methods used in colloidal investigation, dialysis, diffusion and ultra-filtration, the Brownian movement, and the ultra-microscope. The second part is occupied with a description of the so-called "bio-colloids," the enzymes and the products of immunity-reaction. The most interesting division is that on the "organism as a colloidal system," in which the author states his opinion that a colloid is the only possible or thinkable vehicle of life, since a colloid has itself a limited life of its own, an individuality, an evolutionary period of youth, old age, and death. In his article on colloidal forms he quotes and illustrates the beautiful experiments of Professor Leduc on artificial osmotic growths, which are wonderful simulacra, if nothing more, of living forms.

There seems to be hardly any branch of practical medicine which is not touched or influenced by the colloidal theory, from the action of narcotics and anæsthetics to the processes of disinfection—from the use of diuretics and purgatives to the preparation of dyes and microscopical stains. The subject is very interesting, and it is to be wished that some such book existed in English dress for the benefit of the English student.

Gesammelte Werke von Robert Koch. Unter Mitwirkung von Professor Dr. G. GAFFKY, Geh. Ober-Med.-Rat in Berlin; und Professor Dr. E. PFUHL, General-Ober-Arzt a.D. in Berlin; herausgegeben von Professor Dr. J. SCHWALBE, Geh. San.-Rat in Berlin. Leipzig: George Thieme. 1912. Vol. I., pp. 706; Vol. II., in two parts, pp. 1216. Price, in boards, 80 marks; bound, 86 marks.

(*Second Notice.*[1])

THE second volume of this important work opens with a series of letters to the German Minister of the Interior on the subject of the proceedings of the commission sent to study cholera in those parts of the world where epidemics then prevailed. Koch and his assistants started work in Egypt and almost immediately ascertained the presence in the intestine of patients of a specific organism which was not to be found in other conditions (1883). Further researches carried on in Calcutta confirmed this result, but attempts to reproduce the disease by inoculation of animals were for a long time unsuccessful. Finally, in 1885, it was found that by neutralisation of the acid gastric juice guinea-pigs could be killed by pure cultures of the organism. Later, Koch carefully studied the outbreaks of cholera at Hamburg and Altona, and established the bacteriological diagnosis of the disease on a firm footing, as well as the truth of its conveyance by infected water-supply. In a military nation the services of the great bacteriologist were naturally utilised for the solution of problems of military hygiene, and we find an instructive lecture by Koch on this subject delivered in 1888, while in 1902 he investigated an epidemic of typhoid fever and devised means for the control of the disease by bacteriological diagnosis and isolation of sufferers.

During the latter part of Koch's busy life much of his attention was devoted to the study of tropical diseases. An expedition was sent to German East Africa to study malaria, and Koch investigated not only this affection but also rinderpest, plague, and leprosy, besides carrying out researches into the parasitic infections of birds caused by proteosoma and halteridium. In regard to the prevention of malaria he thought that little could be done by measures directed towards destruction of mosquitoes or to segregation of European settlers, and advised careful examination of the blood of the inhabitants, especially children, and treatment by doses of quinine of all those found infected. In 1904 and the following years Koch published a series of communications on the subject of trypanosomiais and sleeping sickness, which he had studied in Africa on a second expedition. He also at this time investigated the piroplasmosis of cattle and the peculiar form of relapsing fever met with in Africa, the so-called tick fever caused by the Spirochæta duttoni. He made careful observations on this organism and contradicted its supposed relationship to the trypanosomes; he also failed to confirm the longitudinal division of the parasite which had been stated to occur. He made the suggestion that the crocodile might act as an alternative host of the Trypanosoma gambiense, and advised attempts to banish the tsetse flies which carried the infection by burning the bush in which they lived. During his African travels Koch did not neglect the opportunity of making observations on the habits of the natives, and published the results of his anthropological studies, the papers being illustrated with many photographs, which are reproduced in this edition.

The second part of this second volume contains Koch's investigations on rinderpest in Cape Colony and the Transvaal, and those on redwater fever (or African coast fever, as it is called in Germany), and on horse sickness. It concludes with a series of unpublished letters and reports on a variety of different subjects, including vaccination, to the efficacy of which he bore convincing testimony. We have here also Koch's earliest publication—a prize essay on the presence of ganglion cells in the walls of the uterus, which shows his early bent towards microscopy and illustrates the care and thoroughness which characterised his work throughout life.

Considering the magnitude of the changes wrought by Koch in the scientific conceptions of his time, his works contain comparatively little controversial writing. He did, indeed, conduct a dispute with Pasteur on the subject of anthrax, on which both of these masters had worked, and the tone adopted towards one who was at least as great a pioneer as himself is not always such as he would probably have adopted at a later period of his life. The discovery of the tubercle bacillus led to the appearance of a vast amount of critical and uncritical comment on his announcement, and Koch's answers to opponents show a considerable faculty of sarcasm; but he does not here transgress the bounds of justifiable defence. Apart from these instances, he was content to publish his results and leave the matter to the judgment of the world, confident that the truth would ultimately prevail.

Robert Koch died from an affection of the heart on May 27th, 1910. An excellent portrait of him forms the frontispiece of this edition of his works, and a photograph of the memorial tablet set up in the Berlin Institute for Infectious Diseases, of which he was for many years the director, is placed at the beginning of the second volume.

High praise must be awarded to this collection of Koch's works. It is well arranged and well printed in type that is pleasant to read. Misprints are few, except in the English address on malaria to the congress at Eastbourne; these might

[1] The First Notice was published in THE LANCET of April 27th, 1912, p. 1134.

have been avoided if anyone conversant with the language had read the proofs. There is also a curious misprint in the title of the paper on "New Methods of Research for the Recognition of Micro-organisms," &c. (p. 274 *et seq.*), the word *mikrocosmen* being substituted for *mikroorganismen*. One great blemish we cannot refrain from mentioning—there is no index, and by this omission the value of the book as a work of reference is seriously diminished. Indeed, in view of the multiplicity of subjects dealt with, especially in the last volume, this defect is inexcusable. We think that it would have added to the convenience of the reader if the plates had been inserted opposite the letterpress referring to them at the ends of the separate articles, instead of being all placed together at the ends of the volumes.

Old-Time Makers of Medicine. By JAMES J. WALSH, M.D., Ph.D., LL.D., Litt.D., Sc.D., Dean and Professor of Nervous Diseases and of the History of Medicine at Fordham University School of Medicine, &c. New York: Fordham University Press. 1911. Pp. 446. Price $2.00 net.

THIS is an eminently readable account of "the students and teachers of the sciences related to medicine during the Middle Ages," by one whose work in similar fields of historical lore is well known to all who take an interest in the history of medicine. It is a rather general opinion that the period termed mediæval was quite sterile in the art and science of medicine. The author shows conclusively "how old the new is in surgery, medicine, dentistry, and pharmacy." He emphasises the puzzling point that important discoveries and inventions are made and then completely forgotten, so that they have to be made over again.

Amongst the subjects dealt with by Dr. Walsh are the great physicians in early Christian times, Jewish and Arabian physicians, Salerno and Constantinus Africanus, Mondinus and Bologna, mediæval women physicians, great surgeons of the mediæval universities, with an especially interesting chapter on Guy de Chauliac, dentistry and Giovanni of Arcoli, Cusanus and the first suggestion of laboratory methods, and, finally, Basil Valentine, last of the alchemists and first of the chemists. It is usual to contemn the Middle Ages for their lack of interest in culture, and more especially in science. Christianity, however, must have exerted a favourable influence on medicine, for it cared for the ailing poor, while hospitals became common in Christian communities during the early Christian centuries.

The modern history of medical education may be traced to Salerno in the tenth century. In this University of the Sicilies, which grew up round a medical school, the statutes required that a candidate for medicine should spend three years in studying logic and philosophy before entering on his medical course, which lasted for four years, with a subsequent year of practice with a physician before he was allowed to begin practice independently. Women's diseases were treated by women, and many women practised medicine in the south of Italy. To Bologna belongs the merit of producing the first "Manual of Dissection." Mondinus 're-introduced dissection demonstrations as a regular practice in the medical schools"—albeit somewhat hurried demonstrations, owing to rapid decomposition of the cadaver. The account of "body-snatching," as it occurred in 1319, in Bologna, reads like similar accounts in times not very remote from us.

In the thirteenth and fourteenth centuries there was a marvellous development in the art of surgery; indeed, many details of modern surgery were anticipated and practised. According to Dr. Walsh the surgeons were even expert in producing anæsthesia, and they operated with great success on the cavities of the skull, thorax, and abdomen. They used strong wine in the dressing of wounds, which may perhaps be regarded as in some sort an anticipation of the antisepsis of modern times. The chapters on dentistry and pharmacy are particularly interesting. Bridge-work was known and practised by the Etruscans. Gold filling is first mentioned by Giovanni of Arcoli, who died in 1484. Nearly 80 pages are devoted to the "Great Surgeons of the Mediæval Universities"—to Guy de Chauliac, Bruno da Longoburgo, Hugh of Lucca, Theodore and William of Salicet, and Lanfranc. In an appendix of over 50 pages the subjects of "St. Luke the Physician," "Science at the Mediæval Universities," and "Mediæval Popularisation of Science" are dealt with in an interesting fashion.

We have said enough to whet the appetite of all interested in the history of the early makers of medicine. We cordially commend the perusal of this fascinating volume, which shows how much was accomplished in every department of intellectual effort in what is usually regarded as the unprogressive, stagnant, dark period of the Middle Ages.

Operative Obstetrics. By EDWARD P. DAVIS, A.M., M.D., Professor of Obstetrics, Jefferson Medical College; Obstetrician to the Jefferson Hospital; Obstetrician and Gynæcologist to the Philadelphia Hospital, &c. With 264 illustrations. London and Philadelphia: W. B. Saunders Company. 1911. Pp. 483. Price 24*s.* net.

IN this book the author presents a concise statement of methods of operating in obstetrics at the present time which he thinks may be of service to the profession. The result forms an interesting summary of what appears to be the present practice of operative midwifery among, at any rate, some American obstetricians. Naturally there are a good many recommendations in the book with which English practitioners will not be prepared entirely to agree. The author cannot be accused of minimising the importance of the subject; thus we find that he recommends a special obstetric anæsthetiser, since he does not consider the ordinary anæsthetist can properly undertake the administration of anæsthetics in obstetric operations. In discussing breech presentations also he says that they require the services of several physicians, and should if possible be conducted in a hospital. This thoroughness is also in evidence in the author's practice. Thus we are told that anterior dislocations of the anteflexed pregnant uterus may occasion disturbances of the bladder and require treatment, and that in all cases of retroversion or retroflexion of the pregnant uterus replacement is to be carried out even in the absence of all symptoms; while repair of the pelvic floor is suggested even during pregnancy, and we are advised in all cases where the placenta is removed manually to anticipate hæmorrhage and to employ a hot intra-uterine douche followed by the uterine tampon. We have no fault to find with these methods—they are no doubt all good ones—but we would venture to suggest that if carried out as frequently as Dr. Davis recommends they will very often be employed unnecessarily.

The author does not seem to regard the induction of premature labour with favour, and from what he says of the method of rupturing the membranes he is apparently unacquainted with the very excellent results obtained in this way by von Herff. The best and most interesting part of the book is the summary of results given at the end of many of the chapters and compiled partly from the author's own experience and mainly from the literature. This is in many cases very full and valuable. There are numerous good illustrations, but they suffer in value because in many chapters they are not referred to in the text and have no direct bearing upon it. Indeed, in the chapter on version there are

a number of most excellent illustrations from Munro Kerr and Nagel, and yet the account of bipolar podalic version given is imperfect and does not resemble the original description of Braxton Hicks, to whose classical paper there is no reference in the bibliography.

Dr. Davis recommends that the forceps should be applied to the sides of the head and employs axis-traction forceps fitted with tapes attached at the middle of the blades. His description of their use is not in accordance with the principle of axis traction as laid down by Milne Murray, and in the figure of the delivery of the head over the pelvic floor the operator is shown holding both the handles and the tapes. We notice one interesting slip. The author speaks of the position of Mercurio or Walcher. Mercurio's position, designed for the delivery of very fat women, is, however, quite different from that of Walcher. It was illustrated first in his book published in 1642, and has often been reproduced in modern text-books.

It is obvious from what we have said that there are many things in this book which are not in accordance with current English teaching and the work is hardly likely, therefore, to appeal as extensively to English readers as to their colleagues in the United States.

LIBRARY TABLE.

James Hutchison Stirling: His Life and Work. By AMELIA HUTCHISON STIRLING, M.A. With a Preface by the Right Hon. Viscount HALDANE of CLOAN. London: T. Fisher Unwin. 1912. Pp. 379. Price 10*s.* 6*d.* net.—The life and work of J. H. Stirling are known to few, and those few mainly the illuminati of philosophy, for his life's work practically consisted in the interpretation of Hegel; and as Cyril and Methodius had to invent an alphabet for the publication of written Christianity among the Bulgarians, so Stirling had to invent a vocabulary for the translation into English of the terms used by Hegel. Our own more immediate interest in Stirling, however, is not due to the system of philosophy that he did his best to make clear to English readers, but to the fact that he was trained as a medical man and passed the early years of his working life as a general practitioner in the Welsh mining valleys. Born in 1820, the son of a Glasgow muslin manufacturer, he was educated at Young's Academy, and matriculated at 13 years of age at the University of Glasgow. Among his fellow students was William Thomson, afterwards Lord Kelvin. Stirling commenced his University studies with the humanities, and five years later, in 1838, he entered on the study of medicine. He received the diploma of the Edinburgh College of Surgeons in 1842. In 1843 he left Glasgow for London. The records of his stay in London are lost, but in November of 1843 he became assistant to a Dr. Lawrence, of Pontypool, Monmouthshire. In 1844 he moved to Hirwain as one of the medical officers to the great ironworks there. He became sole surgeon to the works in 1846, but in 1849 he received an appointment to a practice in the Vale of Neath, where he remained until 1851, when on the death of his father he inherited enough to enable him to give up practice and devote himself to philosophy and literature. His medical experiences, as may be imagined, were many and various, including an epidemic of cholera, and a vivid account of them is to be found in his book, "A Foreign Country at Home." After giving up practice he travelled abroad and was in Paris during the stirring times of the *coup d'état* of 1851. In 1856 he went to Heidelberg, where he devoted himself to the study of German and Hegel. In 1860 he returned to Edinburgh, and in 1864 "The Secret of Hegel" was published. The book was highly praised by Carlyle, Emerson, Erdmann (the German philosopher and a pupil of Hegel), and T. H. Green. Hegel's treatises in their original form are as difficult to understand as any treatise in any language, and it cannot be said that either Stirling's exposition or translation is easy reading; for instance, here is Stirling's translation of a passage from Hegel: "Being-for-Self, as reference to itself, is Immediacy; and, as Reference of the Negative to itself, it is Being-for-self-ity, One, the One,—what is within itself distinction-less, and so excludent of the Other out of itself."[1] For most people Hegel keeps the meaning of this sentence secret. Stirling passed away in his eighty-ninth year.

Honan's Handbook to Medical Europe. A Ready Reference Book to the Universities, Hospitals, Clinics, Laboratories, and General Medical Work of the Principal Cities of Europe. By JAMES HENRY HONAN, M.D. Chicago and Berlin. With maps of Berlin, Edinburgh, London, and Paris. Philadelphia: P. Blakiston's Son and Co.; London: H. K. Lewis. 1912. Pp. 261. Price 6*s.* net.—Few men have had greater opportunities for gaining experience in all matters likely to be of service to medical men seeking post-graduate instruction in the principal cities of Europe than Dr. James Honan, formerly president of the Anglo-American Medical Association in Berlin. For this reason we are a trifle disappointed in the present work, whose object is to give just that information. It is, however, a first effort at collation in this direction, and we confidently expect that when a new edition is called for considerable amplification and more careful revision will be forthcoming. Ninety-one of the 261 pages are occupied with a description of the German universities, and of these pages Berlin claims 69. A full description is given of its libraries, hospitals, clubs, and other associations having special relation to the needs of students in medicine. The courses of the various university professors and *privat-docenten* on the medical side are given in considerable detail. The public health organisations and institutions, the emergency stations, convalescent camps, care of the blind, public safety, water-supply, and sewage disposal are described. With respect to many of the foregoing particulars fairly full information is given also for Munich (pp. 69, 76), and less full accounts of the universities of Leipsic, Heidelberg, Dresden, Frankfort a.M., Halle, Greifswald, Marburg, Strassburg, Hamburg, Breslau, Jena, Würzburg, Stuttgart, Cologne, and Düsseldorf. In Austria-Hungary the account of Vienna is fairly full, and there is a brief account of Prague. In Great Britain the regulations as to graduation at the University of London alone are given, though there is internal evidence that it was originally intended to give information also as to other British degrees and diplomas. There is a good description of the London Post-Graduate Association, with its collaborating institutions, hospitals, and teachers, and the Medical Graduates' College and Polyclinic receives mention. Dr. Honan says: "England is making a splendid effort to organise and systematise the post-graduate work throughout the country. ..... I feel sure that my American *confrères* do not realise the amount and variety of excellent work being given by many of England's very best men, as anyone may see in looking over the list of names in the London Post-Graduate Association, also the names of lecturers in the Medical Graduates' College and Polyclinic." A brief paragraph is all that is given to Ireland. In Scotland the universities of Glasgow and Edinburgh alone are described. In France there is fairly full information as to the Faculty of Medicine and Hospitals of Paris, but nothing save an enumeration concerning any of the other schools. All the remaining European countries are dealt with in 14 pages. The Continental Anglo-American Medical Society is described, and a local directory of its membership is given. There are also tables of European health resorts. Misprints are far too much in evidence. The index will be useful to enable the

[1] The Secret of Hegel, new edition, 1898, p. 501.

reader to find particulars concerning individual teachers in the book. We welcome the work as the first draft of a handbook that may become quite valuable in the future.

Arznei- und Diätverordnungen für die Gynäkologische Praxis. By Professor PAUL STRASSMANN. Berlin: August Hirschwald. 1912. Pp. 102. Price 1 6 mark.—In this little book Professor Strassmann gives in tabular form directions and prescriptions for the treatment of all the commoner gynæcological affections, and though the work cannot be of much service to the English student, it is interesting as affording an insight into the lines of treatment, other than operative, adopted by one of the foremost of the Berlin gynæcologists. The book is interleaved, so that the owner can make notes of any other methods of treatment he may find useful. The instructions for treatment by diet and baths are particularly helpful.

Landmarks and Surface Markings of the Human Body. By L. BATHE RAWLING, M.B., B.C. Cantab., F.R.C.S. Eng., Surgeon in Charge of Out-patients at St. Bartholomew's Hospital. Fifth edition. With 31 illustrations. London: H. K. Lewis. 1912. Pp. 96. Price 5*s.* net.—There is little or nothing to add to the notice of the fourth edition of this book which appeared in THE LANCET of March 25th, 1911. The author states that the work is practically unchanged, though the illustrations have been improved. That the last edition was sold out within one year is the best proof of its utility. We said in our review of the previous edition that Mr. Rawling has advanced along lines somewhat similar to those pointed out by Professor Bertram Windle in his "Handbook of Surface Anatomy and Landmarks" to a stage that is near perfection. We repeat the eulogy.

MISCELLANEOUS VOLUMES.

THE paper of Dr. M. Dominici and Dr. A. A. Warden on the *Technique and Results of Radium-Therapy in Malignant Disease*, which was read before the British Medical Association in 1910, and abstracted in THE LANCET of August 6th, 1910, p. 406, has been republished in pamphlet form (London: J. and A. Churchill. 1912. Price 2*s.* net.). Nearly two years have thus elapsed since the paper was read, and the authors are enabled to state in the preface that of the seven patients suffering from inoperable disease therein referred to as showing satisfactory and complete local regression adequate to justify the word *cure*, not one has shown recurrence or metastasis of the growth for which he was treated. One has since died from acute pneumonia, another from pulmonary tuberculosis. Of the seven cases one was a lymphadenoma, two were sarcomatous, and four epitheliomatous. The authors conclude that radium-therapy holds out hope, even when surgery confesses itself disarmed, especially when it is remembered that most of their cases have been under observation from six to 18 months before being referred for radiotherapeutic treatment.——In a lecture entitled *Sleep and Digestion* (London: John Bale, Sons, and Danielsson, Limited, 1912. Pp. 25. Price 1*s.* net) Mr. George Thomson, L.D.S., gives some interesting notes on the subjects named in his title and their reaction on one another. The lecture was delivered, he tells us, in a former dining-room in Sir Isaac Newton's house at the back of the Royal Dental Hospital, for the benefit of the dwellers in the locality of Leicester-square—a district thus quaintly described by the Rev. Thos. Phillips: "There are no Pharisees—they must all have gone to the suburbs. There are no Sadducees—they must have gone to the garden cities and the university towns; but the publicans and the sinners remain."—— The importance of local medical libraries is becoming more and more appreciated. In a reprint from the *Bristol Medico-Chirurgical Journal* of Dec. 11th, 1911, Mr. L. M. Griffiths gives an interesting account of the Bristol Medical Library, which was founded in 1831, and in 1832 became housed in a building in Orchard-street that had been used for worship by a body of French Protestants, who, after the revocation of the Edict of Nantes by Louis XIV. in 1685, settled in Bristol in large numbers. In 1855 the custody and care of the Medical Library was transferred to the Bristol Library. Its vicissitudes are traced through various amalgamations with other societies, finally passing into the ownership of the city. On July 1st, 1893, the medical books were moved into a magnificent apartment specially constructed for library purposes in the Bristol Medical School. An arrangement for a joint library with University College aided success, achieved under the fostering interest of the chairman, Dr. Greig Smith. Books from the infirmary and hospital were added, and now, owing to the advantages of the conjoint scheme, members of the Bristol Medico-Chirurgical Society can consult 21,929 volumes and 249 periodicals.

JOURNALS.

Jahreskurse für Aerztliche Fortbildung. March, 1912. Münich: Lehman. Price M. 16 yearly.—This number is devoted to a review of recent progress in diseases of digestion and metabolism and the blood diseases. Professor Fleiner writes on the relation between the physical and the psychical in the diagnosis and treatment of affections of the alimentary canal. In a philosophical discussion of the influence of mind upon body he quotes an experiment by Schnyder, who "galvanised" 300 persons with a dummy electrical machine; 77 per cent. of them insisted that they felt something, ranging from a little prickling to actual pain! He lays emphasis on the abnormal mental state in cases of chronic dyspepsia, obstinate constipation, and enteroptosis. Probably a good deal of the benefit obtained by washing out is psychical. The therapy by drugs, especially opium, and by mineral waters and in spas is passed in review. Professor Dr. Hugo Lüthje discusses the progress of our knowledge concerning gout. After a very clear *résumé* of the metabolism of the purin-bodies and uric acid (following the researches of Burian and Schur), he describes the well-known variations in the output of these bodies in gouty persons, leading to uric acid retention, and mentions the explanations advanced by Schittenheim, Umber, and others of the fact that symptoms arise in gout when the blood content of uric acid is less than may be found in leukæmia or pneumonia. After discussing the diagnosis, the writer deals with treatment, recommending colchicum or atophan for the acute cases, and a purin-free or purin-limited diet to ward off the attacks. A useful table of foodstuffs with their purin equivalents is given. There is also a good description of the new radium cure. A brief summary follows of recent German work on diabetes mellitus. Professor Erich Meyer contributes a review on the blood-forming organs and on leukæmia. He describes the mode of formation of the red and white corpuscles in fœtal life and in the adult, and shows how all the blood-forming organs, marrow, lymphoid tissue, and spleen, react to stimulus in the production of the various blood diseases. With regard to leukæmia, he points out that the diagnosis depends more on the differential than on the total leucocyte count. Chronic lymphatic leukæmia, chronic myelogenous leukæmia, and acute leukæmia are then passed in review. In treatment, he gives X rays the principal place, concluding that they stimulate the production of a cytolysin, but he allows that the application is not without risk.

The North of England Clinical Journal. Edited by Mr. GEORGE FOGGIN. Vol. II., No. 2. April, 1912. Quarterly. Newcastle-on-Tyne: George Foggin. Price 1*s.*—In this

issue Mr. J. Swift Joly considers the question of Diagnosis in Hæmaturia, and Dr. Harold Kerr contributes "Public Health Notes." Dr. Stuart McDonald and Dr. H. J. Slade consider Leptothrix Meningitis, with an account of two cases associated with a hæmophilic bacillus. A quaint archæological note follows upon "Small-pox in North umberland 150 years Ago," as depicted in the letters of a lady which give a very graphic picture of its horrors in pre-vaccination days. Dr. William E. Hume, in "The Recognition of Auricular Fibrillation," endeavours to demonstrate the nature of the condition, to show that fingers alone are required for its recognition, and to point out in what way its presence modifies the efficiency of the heart in the two pathological conditions—mitral stenosis and senile "cardio-sclerosis."

New Inventions.

AN IMPROVED TOURNIQUET.

IN all such operations on the skull and brain as allow of its application a tourniquet should be utilised, with the object of controlling hæmorrhage from divided scalp vessels. Cushing's tourniquet was found rather inconvenient in its application, and I am accustomed to use the pattern depicted in the figure. It consists of two flat metal bands connected posteriorly by strong rubber, the two bands passing in front through a metal fixation piece fitted with a screw which, when tightened up, allows of the maintenance of the required pressure.

The instrument is applied as follows. The whole head is enveloped in gauze, two or three layers thick, the tourniquet slipped over the head, as low down as possible, passing from the lower frontal region in front, above the level of the ears, to the lower occipital region behind, and then tightened up in such a manner as efficiently to control bleeding from all divided scalp vessels. A tape, having a loop behind through which the tourniquet passes, is laid in the middle line and fastened in front to the median screw. The tape not only prevents the tourniquet from slipping down over the eyes, but acts at the same time as a convenient guide to the surface-marking of the superior longitudinal sinus. After the scalp flap has been sewn into position, at the termination of the operation, the tourniquet is removed and its place taken by a few turns of gauze bandage, applied, of course, with moderate pressure only.

The carrying out of this improved tourniquet was done by Messrs. Arnold and Sons, of Giltspur-street, London, E.C.

Montagu-street, W. L. BATHE RAWLING, F.R.C.S. Eng.

THE ROYAL SOCIETY CONVERSAZIONE.

THE conversazione held in the rooms of the Royal Society, Burlington House, on Wednesday, May 8th, presented an interesting series of exhibits, but, generally speaking, the brilliant experiment was conspicuously absent. Science during the year, if we may take it that the annual exhibition of the Royal Society mirrors the annual progress that is made, has not reaped startling discoveries of the kind which have marked previous occasions, as when X rays, radio-activity, and fresh electrical phenomena focussed the attention of the visitors. The exhibits of close medical interest were rare, and on the whole geology appeared to have secured the largest representation.

The recording of heart sounds by the string galvanometer, as arranged by Professor Einthoven and demonstrated by the Cambridge Scientific Instrument Company, had a special attraction for the medical visitors present. This instrument is extremely sensitive to sound vibration, which was proved by the fact that the fibre of the galvanometer was moving continually owing to the noises in the room in which the apparatus was exhibited. A stethoscope is connected by a flexible rubber tube with a microphone, in the circuit of which is inserted an accumulator. The circuit is connected with the low resistance primary of an induction coil, the high resistance secondary of which is connected to the fibre of a string galvanometer. Photographic records of the movements are taken by means of a camera which has been specially designed for electro-cardiographic work. Close by there was an interesting exhibit in which was shown the nosema apis the parasite of Isle of Wight disease in bees, by Dr. H. B. Fantham and Dr. Annie Porter. The parasite attacks the epithelium of the chyle stomach of the bee, and there are two stages in its life-cycle—viz., (1) a growing multiplicative stage in the epithelium, often fatal to the host, and serving for increase in the numbers of the parasite in the host; and (2) a spore-producing stage, when resistant oval spores, resembling rice grains in form (but about one-thousandth their size), are produced. These spores are scattered with the excrement of the bees. Food and drink are thus contaminated, and so the disease is spread to fresh bees. Mr. J. H. Mummery exhibited preparations illustrating the distribution of the nerves of the dental pulp, a subject to which he has recently given successful attention, and adjoining Professor G. Elliot Smith showed the desiccated brain of an original Tasmanian, which is the only one in existence. Its preservation is probably due to the peaty nature of the soil in which the body was buried.

One of the prettiest experiments shown was that by Mr. C. T. R. Wilson in an apparatus which made the tracks of ionising particles visible by the vapour condensed upon the ions set free along the paths. It is to be hoped that the striking results of this experiment will some day admit of a photographic record. By the sudden dropping of the floor of a cloud chamber the moist air within it is cooled sufficiently to make water condense on any ions which may be present, while no appreciable stirring of the air results from the expansion. Ionising particles passing through the air leave visible trails, consisting of cloud particles condensed on the ions. Another pretty demonstration was the micro-spectra method of colour photography by prismatic dispersion by Mr. J. Rheinberg. The principle of the method is the production of a surface (ground-glass screen) composed throughout of very narrow contiguous spectra which to the unaided eye appear white owing to optical fusion. Each element of the picture being recorded spectroscopically on the negative, the photographic positive when placed in register over the spectra serves as a mask blocking out those colours not wanted, allowing others to pass through in their proper proportions. Sir William Crookes showed some interesting specimens of fused boron, the most remarkable property of which is the abnormal value of its temperature coefficient of resistance. A small piece of fused boron mounted in series with an electric lamp at room temperature obstructs nearly all the current, but on warming the boron the resistance is reduced and the lamp lights. An interesting glimpse of the investigation upon which Professor Karl Pearson, Mr. E. Nettleship, and Mr. C. H. Usher are at present engaged was given in their exhibit of specimens of live dogs, photographs, and skins bearing upon questions of heredity. Briefly, albino Pekinese spaniels ("Dondos") have been bred together. They have been crossed with pure black Pomeranians, giving the "Pompek," and the hybrid Pompek has been recrossed with the Dondo. Pompek by Pompek crosses were in view, but no female Pompek was at present old enough to mate. The Pompek is a short-nosed, dark-eyed dog, whole black or with a little white on the chest. The Pompek by Dondo is so far short-nosed, and is either whole black or piebald; there has been no completely albinotic coat, and only one out of five puppies shows red reflex in the eyes. Albino by Albino crosses have in a few isolated instances given colour in the coat.

THE next holiday course of the Berlin Association of Dozenten will begin on Oct. 3rd and will finish on Oct. 30th. Prospectuses may be obtained gratis on application to Herr Melzer, Ziegelstrasse, 10–11 (Langenbeck-Haus), Berlin, who will also supply any further information that may be required.

THE LANCET.

LONDON: SATURDAY, MAY 18, 1912.

The Prevention of Destitution.

WE have received from the honorary secretaries of the National Conference on the Prevention of Destitution, Mr. R. V. HARCOURT, M.P., and Mr. J. W. HILLS, M.P., a circular informing us that the second Conference is to be held at the Caxton Hall, Westminster, on the four days from June 11th to 14th, and requesting us to assist them by making known both the date of the Conference and the proposed scope of its discussions. We do this the more readily inasmuch as many of the subjects to be dealt with are not only of supreme interest to the medical profession, but are also of such a nature as to be materially elucidated by medical experience; and we may therefore expect important contributions in relation to them from members of our calling, and especially, perhaps, from medical officers of health and from the medical officers of elementary schools. The former or first Conference under the same auspices was held last year, from May 30th to June 2nd, under the presidency of the Lord Mayor, and was divided into five sections: that of Public Health, Education, Unemployment, Mental Deficiency, and Legal and Financial. The forthcoming Conference is being organised on much the same lines as its predecessor, but its scope is to include a larger range of subjects, while a division into five sections will again admit of the conduct of five debates simultaneously. The titles of the sections will be: (1) Public Health; (2) Education; (3) Unemployment and Industrial Regulation; (4) Housing; and (5) Crime and Inebriety; and specially interesting discussions are anticipated in connexion with the administration of sanatorium benefit, the minimum wage, and the prevention of juvenile crime. The success of the debates will no doubt depend largely on the personality of the sectional presidents and of those who are selected to open the discussions.

The programme is obviously very large, and we should like at once to say one word of premonition. The undertaking, as described in the circular notice, bears, interestingly enough, no inconsiderable resemblance to one of a more ambitious character which was launched in 1857 under the title of the "Social Science Association," and held its first meeting that year at Birmingham under the presidency of Lord BROUGHAM. For some years thereafter the Social Science Association maintained a position of something like rivalry with the British Association for the Advancement of Science, and imitated the older body by holding its annual meetings in provincial towns, in which it was warmly welcomed as a source of profit to hotel-keepers and other tradesmen, and as a break in the ordinary monotony of local affairs by a large number of the residents. Unlike the older association, however, it had little or nothing to show for its labours, and it degenerated into a mere occasion for the utterance of talk which was seldom or never translated into action, and of which a large proportion was of an extremely unpractical character. At the first meeting, for example, an estimable Member of Parliament, who is no longer living, read a paper in which he maintained that a complete reformation of the wage-earning classes might be brought about by the simple expedient of teaching their children, and especially their girls, to speak with carefully and gently modulated voices, and to avoid the "harsh tones" which he declared to be the chief exciting and maintaining causes of domestic disputes. The Social Science Association maintained its existence for 14 years, and finally expired at Newcastle-on-Tyne in 1870, perishing from a redundancy of soft parts as compared with the stability of the skeleton supporting them. We would venture to suggest that its history is not without instructiveness, and that it affords a warning to the promoters of all analogous undertakings to confine themselves to the discussion of remedies of a practical character, capable of being brought to bear, with only slight disturbance of existing machinery, upon evils of a present and pressing character. The initiation of a really workable scheme to deal with a concrete ill—say a scheme for the prevention and cure of carious teeth in children—would do more for the welfare of the rising generation than can reasonably be expected from any amount of discussion of general topics not having any definite plan of reform as their outcome. We would venture to suggest to those medical men who take part in the proceedings that they can perhaps do nothing more useful than to restrain them within strictly practical limits, and to check that excursiveness over the unmapped region of things in general which has been known before now to be characteristic of system-builders and of philanthropists.

It is impossible to glance over the list of subjects for discussion which we have quoted above without recognising in how large a degree they seem to originate in a changed view of the relations which should subsist between the individual and the community. Two centuries ago, even one century ago, the pressure of events and the tendency of public opinion had created and maintained a very general sense of the existence of duty as a moral obligation on the part of every individual towards the individuals of his environment. The individual was kept erect by the surrounding pressure, and recognised that he was called upon to accomplish his share of the general activity supporting him. The prevailing opinion to this effect was based not only upon religious teaching and upon the example of the more highly educated classes, but also, and in a very large degree, upon the practical experience afforded by the history of the nation. We have before us an assize sermon, preached at Dorchester in 1715, appealing to this sense of duty as to a real and abiding force, and seeking to enlist it in opposition to the inroad of the Old Pretender. Its existence was not peculiar to England, and was perhaps never more strongly displayed than by revolutionary France in her uprising as one man against impending invasion, although in the France of the present day we have seen it superseded by "sabotage." Scarcely more than a hundred years ago NELSON'S call to his men to do their duty awoke an echo to which the heart of every Englishman responded. A similar call would

to-day lead to much argument as to what is any particular person's duty. The change is not confined to the labouring classes, as some, for political reasons, alas! would have us believe, but is equally manifest, to all who have eyes to see, in a good deal of the extravagance of the well-to-do. It seems to us to strike at the root of what may be called national cohesion, seriously to weaken our position among the peoples of the world, and to discount our power to encounter any domestic trials or calamities, industrial or other, which the future may have in store for us. We believe that many of the social problems which are now pressing for solution arise in great measure from what may be called diminished national solidarity, from an increased tendency on the part of the half-educated to fight for what they conceive to be their personal interests without regard to those of the surrounding public; and we think that conferences and such-like agencies could scarcely be better employed than in an endeavour to bring home to the public mind the fact that the nation is one and indivisible, that no class can secure prosperity by proceedings which are detrimental to others or to the common weal, and that every man, owing, as he does, his food, his safety, his very life, to the conditions created by the community of which he is a member, owes, in return, to that community the expenditure of his best endeavours for the promotion of its welfare and its prosperity.

The Congress of Universities of the Empire.

ON July 2nd next a Congress of the Universities of the Empire will open in London, at which 52 universities will be represented each by four representatives formally appointed to speak with the authority of delegates. The general London committee includes the chancellors of the universities of the United Kingdom, the Prime Minister and the Leader of the Opposition, the High Commissioners of the Dominions, the Lord Mayor, and the Chairman of the London County Council. H.R.H. Prince ARTHUR OF CONNAUGHT has consented to preside. The chairmen of the various sessions will include such distinguished names as those of Lord ROSEBERY, Chancellor of the Universities of London and Glasgow and Lord Rector of St. Andrews University; Lord CURZON of Kedleston, Chancellor of the University of Oxford; Lord RAYLEIGH, Chancellor of the University of Cambridge; Lord HALDANE, Chancellor of the University of Bristol; and Lord STRATHCONA AND MOUNT ROYAL, Chancellor of the Universities of Aberdeen and McGill.

The subjects scheduled are: (1) Specialisation among universities; (2) inter-university arrangements for post-graduate and research students; (3) the relation of universities to technical and professional education and to education for the public services; (4) interchange of university teachers; (5) the problem of the universities in the East in regard to their influence on character and moral ideals; (6) residential facilities in connexion with universities; (7) conditions of entrance to universities and the mutual recognition of entrance tests; (8) action of universities in relation to the after-careers of their students; (9) university and tutorial class-work; (10) the establishment of a central university bureau, its constitution and functions; (11) the position of women at universities; (12) representation of teachers and graduates on the governing body of a university. Two of these subjects have a special interest from a medical point of view. As regards the relation of universities to technical and professional education, it is recognised that there are two main views, each influenced by circumstances. Some maintain that the true function of the university lies in providing for the student the super-position on a broad general education, of a philosophic grasp of the principles and coördination of those necessary basic sciences or departments of knowledge upon which the subsequent technical training can be imposed without tending to narrowness of view and mere craftsmanship. This attained, the special professional or technical training in details should be sought at technical or professional schools, after which the student, on satisfying his university of his fitness, should receive its cachet. In other words, the university should confine itself to education in general principles; the technical or professional school to instruction in the particular application of those principles. That plan is, in fact, to a large extent in force at the two older English universities; at any rate, as regards medicine, where the student, after a preliminary training in the basic sciences and those ancillary to medicine, betakes himself to centres of professional instruction, returning in due course to submit himself for examination by the university authorities, the satisfactory issue of which gains for him the hall mark of his *alma mater* in a degree. This plan must comment itself to all who feel that there is altogether too great a tendency in these days to commercialise the spirit of the university, the proper aim of which should be, not specifically to train the student for his future occupation, but to fit him to enter on the study of it with a broader grasp, a wider horizon, than that of the mere craftsman, however skilful.

But while we must all grant that principles, not methods, should be the objective of university training, the fact is that as regards certain universities the latter must be sought by the medical student in a technical school. Facts will be acquired the more masterfully in proportion as the previous training has been of a comprehensive and coördinating character; but at many universities the medical schools, in direct association with great hospitals, are themselves an integral part of the university, and the student can go from principle to practice under the immediate ægis of the university. Sir MICHAEL FOSTER once pointed out in an address at Johns Hopkins University, while urging that the university student should have the opportunity of devoting himself to those particular kinds of knowledge which are best suited for his future calling, that the knowledge imparted to him must not merely be a knowledge of facts but must bring with it the power of thinking—he should learn how to acquire knowledge of a particular kind and to recognise that which will be useful to him and that which will not. At the technical or professional school he will be given the opportunity to apply that knowledge so as to gain "experience," which is so often, yet so wrongly, confounded with knowledge, but it does not follow that the technical school cannot in many cases be affiliated with the university,

and the tendency of the modern university is to promote these loose unions with practice. In regard to medicine it seems to us that the harmonisation of entrance requirements is a more important thing to aim for than either the union of the technical school to the university or its divorce therefrom. The student once admitted as an undergraduate, the university that has accepted him should be free to follow its own individuality in his future training, according to the specific characteristics that have been evolved by it under the conditions of its own specific environment. But it is in the highest degree unfair to parents, to youth, and to those whose duty it is to prepare youth for a university career, that such varying requirements should exist as to render years of careful preparation for entrance to a particular university practically useless if chance or circumstance should subsequently render a change of university necessary. It is highly desirable that an adequate preparation for admission to one university should qualify *pro tanto* for admission to any university in regard to all those subjects that all have in common, even though particular universities may deem it necessary to add specific additional tests as a consequence of their specific individual bent. We hope that these points will receive careful consideration at the Congress.

Annotations.

"Ne quid nimis."

THE TROPICAL DISEASES BUREAU.

IN a Memorandum issued this week by the Colonial Office the important announcement is made that from July 1st next the Sleeping Sickness Bureau will be known as the Tropical Diseases Bureau. The Memorandum gives an account of the origin and progress of the present Bureau. At the International Conference on Sleeping Sickness held in London in June, 1907, and March, 1908, it was proposed to found a Central International Bureau "to extract and circulate all new literature on sleeping sickness," but this project fell through because the delegates of the various countries could not come to an agreement as to the site of the Bureau or even the necessity for its separate existence. Arrangements were therefore made by Lord Elgin, then Colonial Secretary, for the establishment of a British Bureau maintained by Imperial funds, with a contribution from the Soudan Government, and the Royal Society generously consented to house the Bureau. During its four years of existence the Bureau, under the direction of Dr. A. G. Bagshawe, has issued 37 numbers of its *Bulletin*, each containing an account of current work in the field and laboratory on sleeping sickness and other trypanosome diseases; and last year it commenced the issue of a quarterly *Bulletin* on kala-azar under the editorship of Dr. C. M. Wenyon. These publications have proved extremely helpful to investigators, and many of the numbers have been reviewed from time to time in the columns of THE LANCET. Among its many other useful functions the Bureau has, of course, also initiated the despatch of special expeditions to investigate sleeping sickness in tropical Africa. The Memorandum, in explanation of the forthcoming change of title, says that it soon became evident that what the Bureau was doing for sleeping sickness could be done in the same way for tropical diseases generally. Lord Crewe and his successor at the Colonial Office, Mr. L. Harcourt, have both interested themselves in the expansion of the Bureau, and the arrangements for this purpose are now complete. The Tropical Diseases Bureau will be quartered at the Imperial Institute, since the accommodation at Burlington House is no longer sufficient. It will deal with all exotic diseases prevalent in tropical and sub-tropical regions, and will publish at frequent intervals a Tropical Diseases Bulletin, which will take the place of the present publications. The director will have the help of an assistant director and a number of experts each responsible for his own subject. The tropical diseases of animals will be dealt with in a separate publication, and for this purpose Sir John Macfadyean and Mr. Stewart Stockman have joined the committee as representatives of veterinary science. We welcome the new Bureau and endorse the anticipation expressed in the Memorandum that through it the results of the most recent researches on every tropical disease in every country, as well as new methods of treatment and improved means of prevention, will quickly become available for the remote worker in the tropics.

THE TIME TO OPERATE IN APPENDICITIS.

FROM almost the very beginning of the recognition of appendicitis there has been much discussion as to the most suitable time for operation. The question is, Shall the surgeon proceed to operate directly the diagnosis of appendicitis has been made, or shall he postpone the operation to the interval after the inflammatory signs have disappeared, except in certain cases where an immediate operation is required owing to the fact that the appendix is sloughing? Each of these opinions is held by many surgeons, but the relative proportions of those who hold the one opinion or the other has varied greatly from time to time. On the whole, it may be said that at the present day the majority of surgeons advocate an immediate operation in practically all cases of appendicitis. In the last issue of THE LANCET there was published a lecture by Sir George Thomas Beatson, in which he expressed his opinion as to the right time to operate in appendicitis. He holds that if diffuse suppurative peritonitis is present an immediate operation is desirable, and the peritoneum should be drained through a right iliac incision, a suprapubic opening being also made; the appendix is only removed if it is easily found. He also operates if any collection of pus points externally, but, except in these circumstances, he operates only in the interval period. When the blood count remains high he takes this as an indication not to operate, but to wait for three or four weeks until the pus becomes sterile. The results of this plan of treatment in Sir George Beatson's hands are certainly very good. In the last 14 years he has treated 273 cases of appendicitis, of whom 264 left the hospital well; of these he had operated on 256, while 8 refused operation; but of the whole number only 9 died. This represents a mortality of less than 3½ per cent. Statistics are given of the death-rates of some other surgeons, and in every case they are much higher, so that so far as we may depend on statistics there is much to be said for his method. It is, of course, impossible to say with certainty that the cases were absolutely comparable, but the probabilities are that there was no very great difference. Sir George Beatson operates immediately in some cases; and the real problem consists in the difficulty of recognising those cases in which an immediate operation is necessary and those in which the operation may be postponed to the time when the pulse, the temperature, and the blood count have returned to the normal. Each surgeon must judge for himself as to the cases which he feels he may leave with safety, and it is difficult, if not impossible, to lay down rules; but Sir George Beatson has done good service in drawing

attention to the need for discrimination in the choice of cases and in showing the good results which can be obtained by refusing to operate immediately in every case, and postponing those which experience has shown may be left with safety to the "interval."

OZONISED AIR IN TUBE RAILWAYS.

THE supply of ozonised air in the Central London Tube Railway is an accomplished fact, and there can be little doubt that the system adopted (ozonair) is so far giving satisfactory and agreeable results. It was found that the mere pumping of large volumes of ordinary air into the tube did not deal with that "tube frowsiness" which is familiar not only to travellers on the line, but to anybody who happens to be in the neighbourhood of a lift just discharging its passengers in the street. However chemically satisfactory air may be shown to be, the merest trace of offensive smell renders it unfit for healthy respiration. There may be present a maximum of oxygen and a minimum of carbonic acid gas, but still the air may remain unhealthy on at least three counts. It must be free from disagreeable smell, it must be in motion, it must be reasonably humid. These conditions appear now to be complied with by the use of a constant stream of air, washed, screened, and mildly ozonised. In the Central London Railway the air is stated to contain rather less than one part of ozone in a million parts of air, and yet the presence of this gas is perceptible, not so much as an odour as by the agreeable fresh character which its presence gives to the air. The employment of ozone probably suffices to remove those organic impurities which render the air stale, flat, and unprofitable. Ozonised air, in fact, as was pointed out by Dr. Leonard Hill, relieves the depressing effect which air tainted by foul odours has upon the nervous system. It will be interesting to watch the progress of this big experiment, and we understand that it has already given great satisfaction to the employees on the line, who speak of the obvious relief from stuffiness and objectionable odour which has resulted since the installation was started. The whole of the plant and machinery is operated by the same electric current which is used to work the trains, and the ozone generator is of a special type which does nothing more than condense a very small part of the oxygen of the air into pure ozone.

A CUTANEOUS INOCULATION TEST FOR THE DIAGNOSIS OF SYPHILIS.

IN an annotation published in THE LANCET of August 19th, 1911 (p. 536), there appeared a brief account of the successful efforts at cultivation of the spirochæta pallida made by Dr. Hideyo Noguchi at the Rockefeller Institute for Medical Research, New York. This investigator has been pursuing the inquiry along several lines, and gives an account of various interesting and important results in the *Journal of the American Medical Association* of April 20th, 1912. He has isolated the spirochæta of syphilis in pure culture seven times from chancres, condylomata, and skin papules in human subjects, and six times from experimentally infected rabbits. These 13 strains are morphologically and culturally identical; inoculation of the human strains into monkeys has produced typical cutaneous lesions and a positive Wassermann reaction; and it has proved possible to differentiate the spirochæta pallida after cultivation from the other spirochætæ (S. macrodentium, S. microdentium, and S. refringens) which resemble it most closely in form. All these results are of great interest and seem to prove the validity of Dr. Noguchi's claim that the spirochæta pallida can be obtained in pure culture from suitable syphilitic lesions in the human subject. Even more interesting, however, is the practical application to which Dr. Noguchi has put his discoveries. He prepared an extract from pure cultures of S. pallida, and after testing it successfully in rabbits experimentally infected he applied it to the clinical diagnosis of syphilis. A supply of the spirochætal extract, to which he has given the name "luetin," has been sent to other investigators, two of whom report that it yields a specific reaction. Dr. Noguchi's own observations also bear out this conclusion. The extract was injected subcutaneously into 315 syphilitics and into 250 normal persons. In the normal subjects there was a slight reaction which disappeared in 48 or 72 hours, leaving no induration. The positive reaction, which appeared in a large majority of the syphilitic patients, was papular, pustular, or "torpid." In the first type a large papule appears in 24 to 48 hours, reaches its maximum by the fourth day, and then slowly recedes. The pustular reaction proceeds similarly until the fourth day, when the centre of the papule begins to break down, forming a pustule which soon bursts, leaving a crust which falls off after a few days. The induration round the pustule disappears about the same time, and the pustule heals almost without cicatrisation. There were practically no constitutional symptoms. The reaction was positive after an interval of quiescence in a few cases; it is to this group that the term "torpid" is applied. In cases of primary syphilis, secondary syphilis with symptoms, and congenital syphilis manifesting itself in the first year of life, the reaction usually failed; but in secondary syphilis without symptoms, in tertiary and latent cases, and in late congenital syphilis, the characteristic reactions appeared in a very large percentage of the cases tested. The results in cases of cerebro-spinal syphilis were indecisive. Dr. Noguchi suggests that the luetin reaction may supplant the Wassermann test as an index of active infection, especially in late cases, and that it may prove serviceable as a measure of the defence which the patient is able to summon up against the infection. Of course, it would be premature to regard these suggestions in the light of proved facts; but at least the profession owes much to Dr. Noguchi for the attempt to place in its hands a diagnostic method easier of application than the serum tests. How far this attempt is to be successful remains to be seen.

"THE FASHIONABLE DOCTORING SHOP."

UNDER the above heading, and in one of a series of articles upon "Wonderful London," the *Evening News* recently described a person unnamed who was represented as prescribing for a constant stream of patients suffering mainly from over-indulgence in social pleasures in a place of business "unlike the average chemist's shop mainly in the non-assertiveness of its character." The tradesman thus depicted may have been a type and not an individual, but we give our contemporary credit for a fairly accurate picture of a form of unqualified practice which, it informs us, "is becoming an institution in the West-End," the locality fixed in the article being "an off street not far from Piccadilly." There can, indeed, be little doubt that trade of the kind described in the article, consisting chiefly in the prescribing of drugs calculated to afford temporary relief from the unpleasant symptoms produced by excessive self-indulgence, is carried on without regard to the evil results which it entails, and we suggest that the Society of Apothecaries might possibly test the legality of what takes place in such "institutions." We regard the raising of the question of legality as being desirable, if evidence justifying such a step can be obtained, not because we accept the opinion of the article writer that the druggist who seeks to alleviate the headaches and stomach-aches of the haunters of Piccadilly bars and restaurants is a serious competitor of "the Harley-street physician," but rather because the number of

persons who will eventually need the aid of the physician must inevitably be increased through the habitual seeking of temporary relief and stimulation, where more radically effective measures are necessary. It is true that the article referred to represents the druggist as recommending a lady complaining of insomnia to consult a medical man, and as urging a sufferer from the effects of alcohol to "pull up" and forego stimulants. He is, however, shown also as treating both applicants for his aid, and any practice such as that described must depend for its existence upon the affording of temporary relief from disagreeable symptoms rather than upon the combating of the causes. Assuming that the article was based upon observed facts, we say emphatically in comment that the habit of "getting one's doctoring over a counter as one buys one's gloves or cigars" is a dangerous one for those who indulge in it.

ACUTE YELLOW ATROPHY OF THE LIVER IN A CHILD.

ACUTE yellow atrophy of the liver, which is one of the rarest of diseases, has seldom been observed in children. In the *American Journal of the Medical Sciences* for February Professor John Phillips has reported the following case. A girl, aged five years, was admitted into hospital on Nov. 3rd, 1909. A week previously she began to lose appetite and to vomit several times a day. She vomited last two days before admission. During this time she became increasingly jaundiced, the stools became clay-coloured, and the urine of a deep yellow colour. During the last 24 hours she had been unconscious. She was a well-developed, well-nourished child, tossing about restlessly in bed. The skin and mucous membranes were deeply jaundiced. There were a small ecchymosis in the left lower quadrant of the abdomen, another on the outer side of the right arm just above the elbow, and numerous petechiæ over the lower limbs below the knees. She was unconscious, but seemed hypersensitive when touched. The pupils were widely dilated and reacted sluggishly to light. The tongue was heavily coated with a yellowish-white fur. There was slight general glandular enlargement. The rectal temperature was 96·2° F. The respirations were 30 and somewhat shallow and irregular. The pulse was 64, and except for some arrhythmia the heart showed nothing abnormal. The abdomen was somewhat distended, especially in the lower part (in consequence of a full bladder). The spleen could be felt. The lower edge of the liver was not palpable; the upper border of hepatic dulness began at the fourth rib in the mammary line and at the sixth rib in the axillary line. The tendon reflexes were exaggerated, and there was some spasticity of the legs. The urine was dark yellow, of specific gravity 1017, alkaline, and containing bile in large quantity and a trace of albumin. In the centrifugalised sediment were many epithelial and hyaline casts and many leucin crystals. The leucocyte count was 22,400. Soon after admission the child vomited and the vomit contained dark clotted blood. The stomach was then washed out and many blood clots came away. Death occurred two hours later. At the necropsy numerous hæmorrhages were found in the omental and mesenteric fat. The liver was small, its lower border being well above the costal margin, pale and very flabby. It weighed 250 grm. On section the lobular markings were indistinct and showed bright yellow areas 1 to 2 centimetres in diameter mingled with reddish slightly depressed areas. In the peritoneal cavity was a small amount of bile-stained fluid. There were a few hæmorrhages into the mucosa along the greater curvature of the stomach. There were small pleural and pulmonary hæmorrhages. The kidneys showed cloudy swelling. Microscopic examination of the liver revealed extensive degeneration. In many sections no trace of liver cells could be seen; in others remained traces of cells, which were granular, vacuolated, and stained diffusely. Glisson's capsule showed slight round-celled infiltration and was thickened. Cultures from the heart blood yielded a pure growth of staphylococcus albus. Sections of the liver stained by the Levaditi method failed to show spirochætæ.

A SIMULTANEOUS APPEAL TO THE EYE AND EAR.

MODERN marvels seem never to cease, and the solution of the problem of producing simultaneously combined pictorial and audible records is another triumph which was brought to the notice of a delighted and charmed audience by Professor W. Stirling at the weekly evening meeting of the Royal Institution of Great Britain on May 10th. The "chronophone," invented by M. Léon Gaumont and his collaborators, supplants all previous attempts to combine the sounds of the phonograph or gramophone with the pictures of the cinematograph, for it fulfils the following conditions: (1) absolute synchronism is obtained between the phonograph and the cinematograph both in recording and reproducing the result; (2) registration of sound is secured by the phonograph at a sufficient distance at the same time as the registration of the pictures on the moving film, without the phonograph being in the field of the cinematograph; and (3) the sound is so amplified that a large audience can hear it and observe the exact correlation between the movements of the speakers, or actors, or singers, and the audible sounds as regards pitch, loudness, and quality, whether vocal or otherwise. As Professor Stirling observed, it might be thought that important corrections would have to be made, because of the enormous differences in the velocity of sound waves and luminous waves, but it is not so, for "to all intents and purposes, at a short distance, as in a theatre, the illusion of blending speech, voice and movement is complete." Thus this one simultaneous record to the eye and to the ear is so good that a large audience is able to see and hear all that marches in unison, producing an illusion so complete as almost to represent real life. The great scenes and music of opera, the majestic choruses of oratorio, the epoch-marking speech of a philosopher before a learned assembly, the impassioned delivery of a statesman in a crowded House on a great national crisis or far-reaching measure of reform, are thus capable of being captured—gesture, voice, scene, and all—to be preserved in the archives and to be reproduced at will. What will Art say, and will Science count it all for progress?

THE VENTRICLE-STRIPPING OPERATION FOR "ROARING" IN HORSES.

IN the April number of the *Veterinary Journal* Professor Hobday continues his series of articles bearing upon the results of the newly introduced operation, which has for its object the alleviation of the distress caused by paralysis of the left vocal cord in horses.[1] Up to the present time the author has operated upon over 520 individual cases, some of which have not yet been tested, and the object of his present article is to demonstrate the permanent value of the result. For this purpose he has selected 100 cases, each of which has been working to the satisfaction of its owner for a period of at least 18 months; and although from the statistics published we judge that only a proportion of the animals have

[1] THE LANCET, Sept. 10th, 1910, p. 840

become sufficiently noiseless to be passed (upon veterinary examination) as absolutely "sound" in wind, yet a very high percentage of horses which were useless and could not be galloped without causing dyspnœa and consequent distress before being operated upon, have, as the result of the operation, been restored to usefulness. A horse which is a good hunter becomes as much a favourite in the eyes of a man as does a pet dog in the eyes of a lady, and any operation which can restore the animal to usefulness is welcomed. Until the introduction of the laryngeal operation the only means of saving the "roarer" had been to insert a tracheotomy tube, and it is generally conceded that this contingency is always avoided as long as possible. Its unsightliness, the trouble of keeping it clean and sweet, and its many other inconveniences are so well known that anything which will act as an efficient substitute will always be given a trial before resort is made to this measure. The ventricle-stripping operation was first tried and abandoned as a failure some 40 years ago by Professor Günther, of the Hanover Veterinary School; revivified and made a success by Professor Williams, of the Veterinary Faculty of Cornell University, U.S.A., some six or seven years ago; and introduced into Europe by Professor Hobday, who lays claim to many original improvements and modifications in the method of operating. It will be remembered that Professor Hobday read a paper on this subject before the Royal Society of Medicine (Laryngological Section) last year, and he then expressed a very hopeful opinion, which has since been justified, of its value.

A HUNTERIAN LIBRARY.

A LETTER from John Hunter, dated 1786, is extant, in which the great anatomist expresses a hope that the Corporation of Surgeons will form a library, and at the same time he presents his published works thereto by way of a beginning. To these he refers modestly as "the few observations on anatomy and surgery which I have published." These particular volumes are not traceable, but in view of this letter it is interesting to note that Hunter had already helped to found a small medical library, characteristic of the state of knowledge of the times, for the use of the Lyceum Medicum Londinense. This society was founded in 1785 by Dr. George Fordyce, famous and eccentric in his day, and by John Hunter, who were its patrons. Its meetings were held in a room under the Hunterian Museum in Castle-street, and here the books were housed. In the "Regulations and Laws" of the society, published in 1787, we find a list of some 150 volumes in folio, quarto, and octavo, which are designed for the use of members. The books can be taken out by members, who must deposit an equivalent sum of money for the borrowed volumes. "Folios and quartos shall only be kept a fortnight; all other books only a week." Among the folios we find such well-known works as those of Albinus, Avicenna, Dioscorides, Eustachius, Galen, Hippocrates, and Morgagni "De Sedibus Morborum," besides Hoffmann's, Freind's, and Parey's works, Dr. Hunter's "Gravid Uterus," and Motherby's "Medical Dictionary." Among the quartos are the works of Haller, Harvey, Heister, and Francis Bacon, as also Dr. Hunter's "Medical Commentaries" and John Hunter on the Teeth. Monro Senior's works and van Swieten's "Commentaries" are in the same list. Among the octavos are works by Bell (on surgery and ulcers), Boerhaave, Buffon, Celsus, Cullen, Duncan, Huxham, Locke, Lavoisier, Mead, Priestly, Pringle, Spallanzani, Sydenham, Wiseman, and Zimmermann. A few presents to the library are recorded, among which we note works by Fordyce, Hunter, Houlston, Home, Ferris, Cruikshank, Bardesley, Jackson, and Denman, and a six-volume cyclopædia in folio from the "patrons." To which of the great medical libraries these works ultimately found their way it has at present been impossible to discover. They are doubtless the nidus of one or other of our great collections, either at the Royal College of Surgeons or at the Royal Society of Medicine.

THE NEW RESEARCH HOSPITAL AT CAMBRIDGE.

THE Universities have long been spoken of as "seats of learning," but for too long the full significance of that term was unappreciated. The function of a university surely consists not merely in cultivating and imparting learning, but to at least an equal degree in extending its boundaries—in other words, in prosecuting research and bringing under the sway of knowledge fresh provinces from the dark continent of ignorance. In medicine particularly a great field lies awaiting exploration. In such exploration more reliance must be placed on the means universally employed to-day in all progressive movements—viz., the organised, concentrated, and systematic following up of special investigation into particularised problems, rather than on the method more usual in the past of merely collecting the spasmodic, and often accidental, observations of individual workers. The medical faculty of the University of Cambridge will certainly find a useful ally in this part of its work in the new Cambridge Research Hospital, where the relief of sufferers from those chronic diseases which are, as a rule, unduly neglected by research, will be combined with a systematic and collective study of the morbid conditions themselves. Not only will sufferers in the future receive increased benefit, but preventive measures will be evolved, thus lessening the sum-total of suffering and perhaps in the case of some diseases altogether abolishing it. The subject at present occupying the attention of the Committee for the Study of Special Diseases, whose work will soon be carried on with all the facilities that the new hospital will place at its disposal, is the pitiable condition of sufferers from rheumatoid or osteo-arthritis and its congener, chronic gout. We suggest to medical men that if the attention of their well-to-do patients afflicted with these conditions, as well as of their friends, were directed towards the work, a sum adequate for the endowment and maintenance of the hospital might easily be raised. The new hospital, as was announced in our last issue, will be opened on Friday next, May 24th, at 3 P.M., by Dr. R. C. Brown, of Preston, who has been a most generous supporter of the work in the past, and for the last three years has given a research scholarship of £150 per annum, which he has promised to continue for a further period of two years. Dr. Brown will have the support of the Vice-Chancellor of the University, the Mayor of Cambridge, the President of the Royal College of Surgeons of England, and the Regius Professors of Physic of both Oxford and Cambridge Universities. The hospital is situated in the Hills-road, on a site generously presented by Miss Sykes, of Lindley, Huddersfield, and is built in Georgian style from designs by Mr. Herbert W. Maguire, of London.

RECURRING HÆMOPTYSIS DUE TO A SMALL AORTIC ANEURYSM.

IN the *Canadian Journal of Medicine and Surgery* for March Professor H. B. Anderson, of Toronto, has reported a case of recurring hæmoptysis which gave rise to great difficulty of diagnosis and was due to an unusual cause—a small aortic aneurysm. The patient was a farmer, aged 60 years, of good physique, who had always taken care of himself, had been temperate, and gave no history of syphilis. He consulted Professor Anderson in the summer of 1909 for recurring hæmoptysis, from which he had suffered for two or three years. The attacks came on without warning, at

first at intervals of a few months, afterwards every week or so. At times the amount of blood lost was large; at other times only a few mouthfuls were brought up with little effort. The blood was bright red and frothy. After the hæmorrhage frothy blood-stained mucus was expectorated for a few days. The bleeding seldom occurred during exertion, usually some hours after it, or when he was in bed. There was marked anæmia of the secondary type, the hæmoglobin amounting to about 60 per cent. Physical examination was negative. The heart, arteries, and blood pressure were normal for a man of his years. The chest was well formed and, apart from scattered crackling râles following a hæmorrhage, there were no signs. Except for transient fever following the attacks the temperature and pulse were normal. The patient's general nutrition was good. The von Pirquet and the subcutaneous tuberculin tests were negative. Repeated examination of the mucoid expectoration following the hæmorrhages failed to show any tubercle bacilli. The upper air passages were examined by Dr. Wishart, who reported that the only abnormality was dilatation of faucial venules. The patient consulted 37 physicians and was repeatedly examined in the most careful manner without any explanation of the hæmoptyses being found. Latent tuberculosis, latent tumour, miliary aneurysm, faucial varices, and tracheal or bronchial vessels were all considered as sources of the hæmorrhage, but no positive evidence was forthcoming. Examination with the X rays showed a rather diffuse shadow at the left pulmonary apex, which physical examination could not satisfactorily explain. There was no dulness, limitation of movement, râles, or altered breath sounds. About Christmas, while undressing one evening, profuse hæmorrhage occurred, and he died in a few minutes. The necropsy showed a very slightly atheromatous aorta. The antero-superior aspect of the left portion of the arch was adherent to the adjacent left pleura. At this spot was an aneurysm of the size of an almond, from which leaking had taken place into the apex of the left lung and thence into the bronchi. Infiltration of the tissues by blood explained the shadow obtained by the X rays.

THE next session of the General Medical Council will open on Tuesday, June 4th, at 299, Oxford-street, London, W., when the President, Sir Donald MacAlister, K.C.B., will take the chair at 2 P.M.

THE Ingleby lecture for 1912 will be delivered on Thursday next, May 23rd, at 4 o'clock, in the medical lecture theatre of the University of Birmingham, by Mr. J. Furneaux Jordan, surgeon to the Birmingham Hospital for Women, on the subject of Puerperal Infection.

AS we have already announced, the opening of the new building of the Royal Society of Medicine by His Majesty the King, Patron of the Society, accompanied by the Queen, will take place on Tuesday afternoon next, May 21st. The ceremony will begin at 3 o'clock precisely. On the evening of Wednesday, May 22nd, the President of the society, Sir Henry Morris, will hold a conversazione from 9 till 12 o'clock at No. 1, Wimpole-street, to celebrate the opening of the building.

THE annual conversazione of the Medical Society of London will be held on Monday next, May 20th, at the Society's house, 11, Chandos-street, Cavendish-square, W. The annual oration will be delivered by Mr. J. Bland-Sutton on Fertilisation in Relation to Pathology. During the evening the Lord Mayor of London (Sir Thomas Boor Crosby) will be admitted an Honorary Fellow of the society. There will also be an exhibition of interesting items connected with the history of the society and some of the society's bibliographical treasures.

HEALTH OF EUROPEANS IN WEST AFRICA.

BY ARTHUR E. HORN, M.D., B.SC. LOND.,
MEDICAL OFFICER, WEST AFRICAN MEDICAL STAFF.

THE vital statistics of non-native officials in West Africa, the returns of which for the year 1911 have recently been presented to Parliament by the Colonial Office, afford very interesting reading and contain matter which is worthy of close attention. They are drawn up in accordance with strict actuarial methods, and comprise five tables, showing, respectively, the age distribution of European officials in the Government service at the beginning of 1911, the deaths in and invalidings from each of the five British West African Dependencies, the rates per 1000 of deaths and invalidings at various ages, particulars of officials who left the service during the year, and a summary of returns for the last nine years, from 1903 to 1911.

Death-rates.

In 1911 the total death-rate was 13·9 per 1000, a decrease of 6·5 from that of the previous year; excluding 5 deaths due to causes other than disease, the rate per 1000 was 11·7, or a decrease of 5·0 from the corresponding rate for 1910.

The considerable fall in the death-rate for 1911 must be regarded as very satisfactory, especially in view of the fact that during the year there were serious outbreaks of yellow fever in the Gold Coast and the Gambia. These outbreaks accounted for the deaths of 13 non-native unofficials in the two Colonies, in addition to the 4 deaths of officials included in the returns.

TABLE I.—*Returns showing Deaths and Invalidings in 1911.*

Colony or protectorate.	Deaths.									Invalidings.								
	Central age 25.	Central age 30.	Central age 35.	Central age 40.	Central age 45.	Central age 50.	In 1st year.	In 2nd year.	In 3rd year and over.	Totals.	Central age 25.	Central age 30.	Central age 35.	Central age 40.	Central age 45.	Central age 50.	In 1st year.	In 2nd year.	In 3rd year and over.	Totals.
Gambia	1	1	1	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0
Sierra Leone ...	1	0	1	0	0	0	0	1	1	2	0	2	1	0	0	0	0	0	1	3
Gold Coast... ...	0	2	1	2	0	0	0	0	5	5	1	7	6	1	0	1	3	4	9	16
Northern Nigeria	0	3	2	5	0	0	1	1	8	10	3	7	5	4	1	0	2	3	15	20
Southern Nigeria	0	5	3	3	1	0	2	1	9	12	3	3	8	3	2	0	4	2	13	19
West Africa ...	2	11	8	10	1	0	3	4	25	32	7	19	20	8	3	1	8	7	43	58

(The totals given for the columns headed "In 1st year," "In 2nd year," "In 3rd year and over," are not, as will be seen, in all cases the actual totals of these columns. This is explained by the fact that certain officials, though they died or were invalided from a particular colony in their first or second year of service, had, owing to previous service in another colony, two years' service or three years' service and over in West Africa as a whole at the time of their death or invaliding.)

The causes of deaths during the year 1911 were as follows: 3 blackwater fever, 4 blackwater fever and heart failure, 1 subtertian malarial fever of cerebral type causing meningitis, 1 malaria and cardiac asthenia due to fatty degeneration of the heart, 4 yellow fever, 1 liver abscess, 1 dysentery and hepatic abscess (operation), 1 acute hepatitis and syncope, 1 cirrhosis and cardiac failure, 1 iliac abscess and peritonitis, 1 valvular heart disease, 1 dilatation of heart and valvular disease with aortic dilatation, 1 nephritis, 1 aneurysm of arch of aorta, 1 acute pneumonia, 1 acute pneumonia and meningitis, 1 pulmonary tuberculosis, 1 erysipelas of head and hyperpyrexia, 1 œdema of glottis, asphyxia, and heart failure, 1 accident, 1 blasting accident (explosion), 1 gunshot accident, 1 killed by natives, and one accidentally drowned. 22 deaths occurred in West Africa, 8 in this country, and 2 at sea.

In addition to the deaths included in the returns there was one death amongst the 'construction' officials, numbering approximately 67, employed in the Gold Coast. The cause

was acute yellow atrophy of the liver and exhaustion. There was also one death from blackwater fever at Jebba in Northern Nigeria amongst the railway construction staff employed on the Lagos Railway Northern Extension. The number of officials employed on this extension during the year was approximately 81.

Invaliding Rate.

As compared with 1910 it will be seen from the summary of returns from 1903–1911 (printed below) that there is a further decrease in the invaliding rate for the latter year of 7·3 per 1000. It should be observed that although the number pensioned on account of ill-health during this year (28, against 15 in 1910) has very nearly doubled, yet the proportion of these to the total has not materially altered. It may be mentioned here, as supporting the view that a man quickly recovers from the effects of the West African climate, that officials invalided from the service are not infrequently found fit for re-employment after residence of a year or so in this country. Also officials pensioned generally enjoy their pensions for many years; in one or two cases the period on pension has been as much as 40 years.

Under "invalidings" are included not only officials who were invalided home before completing their tours of service and whose appointments were terminated, but also all officials who, though they completed their tours, did not return to West Africa for health reasons, and also West African Frontier Force officers and non-commissioned officers who were unable, on account of ill-health, to rejoin their regiments at the expiration of their vacation leave. In practically every case the official had less than seven years' service. Pensioned officers are not included in this column.

In reckoning the length of service of an official the periods spent on the voyage to and from West Africa and during leave in this country are included. The actual period of residence in West Africa may be reckoned, roughly, as ranging from two-thirds to four-fifths of the total service.

Of the officials who left the service during 1911 about 18 per cent. left owing to the expiration of their agreements or the completion of the work for which they were engaged, and about 7 per cent. at the expiration of the five years for which they were seconded by the War Office.

TABLE II.—*Summary of Returns from 1903 to 1911.*

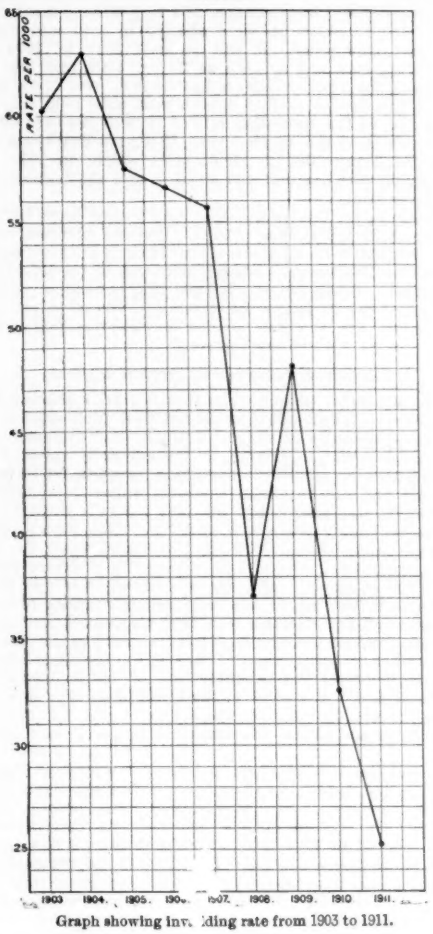
Year.	Average No. in service.	Deaths. Total.	Deaths. Rate per 1000.	Deaths. Average length of service.	Pensioned. Ill-health.	Pensioned. Total.	Invalidings. Total.	Invalidings. Rate per 1000.	Invalidings. Average length of service.	Total No. who left service.	Average age on termination.	Average length of service on termination.	No. in service on Dec. 31st.
				Y. M.					Y. M.		Y.	Y. M.	
1903 ...	1259	26	20·6	1 9	5	8	76	60·3	2 0	235	—	2 4	1398
1904 ...	1428	39	27·3	3 3	6	8	90	63·0	2 0	327	—	2 6	1461
1905 ...	1491	42	28·1	3 6	7	8	86	57·6	2 7	300	—	3 1	1524
1906 ...	1553	33	21·2	3 10	7	10	88	56·6	2 4	285	—	3 2	1586
1907 ...	1628	29	17·8	4 5	9	13	91	55·8	2 10	267	33	3 5	1670
1908 ...	1803	32	17·7	4 0	16	21	67	37·1	3 5	245	35	3 11	1932
1909 ...	2015	35	17·3	4 6	17	22	97	48·1	3 1	330	34	3 9	2091
1910 ...	2153	44	20·4	5 1	15	21	70	32·5	3 5	350	35	3 9	2212
1911 ...	2293	32	13·9	4 7	28	37	58	25·2	3 4	355	35	4 4	2371

Taking the period from 1903 to 1911 the number of deaths was 312, of which 41 were due to causes other than disease. The total death-rate for the period works out at 19·9 per 1000 and the rate due to disease only, climatic and non-climatic, as 17·3 per 1000. The rates corresponding to the latter rate were 19·3 for the period 1903–1908, 18·6 for the period 1903–1909, and 18·3 for the period 1903–1910.

In comparing the death-rates of the extreme years of this period it is seen that, whereas in 1903 with 1259 European officials there was a death-rate of 20·6 per 1000, the rate has fallen to 13·9 per 1000 in 1911, when the number of officials has nearly doubled; while, at the same time, the average length of service of the deceased officers has increased from less than two years to over four years and a half. Similarly, the total invaliding rate, which was over 60 per 1000 in 1903, has fallen to just over 25 per 1000 in 1911, while the average

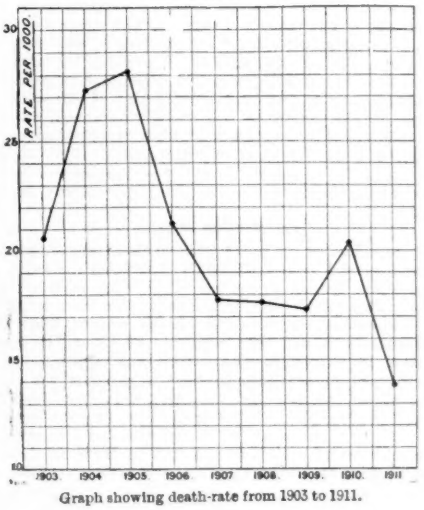
Invaliding and Mortality Rates in West Africa.

FIG. 1.



Graph showing invaliding rate from 1903 to 1911.

FIG. 2.



Graph showing death-rate from 1903 to 1911.

length of service of officers invalided has increased from two years in 1903 to three years and a third in 1911.

Reference to the charts of the invaliding and death-rates here reproduced demonstrates in a very striking manner the large decline which has been effected in both rates during the last nine years. It will be seen that in 1904 the invaliding rate was as high as 63 per 1000, and this was followed the next year by a death-rate of over 28 per 1000. There was then a decline in both rates until 1908, followed by a rise in the invaliding rate of 1909 to just over 48 per 1000, while in the ensuing year, 1910, the death-rate rose from 17·3 per 1000 to 20·4, after which, in 1911, the invaliding rate has declined to 25·2, and the death-rate to 13·9 per 1000.

These latter figures are the lowest that have hitherto obtained in British West Africa. Previous statistics, covering the period of 17 years—from 1881 to 1897 inclusive—show that 554 European officials employed in the Gold Coast produced a death-rate of 75·8 per 1000 per annum; and of 258 employed in Lagos the death-rate was 53·6 per 1000 per annum, figures which justified the sad reputation of West Africa as the "white man's grave."

Results of Discoveries in Tropical Hygiene.

The wonderful improvement that has been effected since this time must be ascribed to the practical application of the modern discoveries of tropical medicine and hygiene. It is unnecessary here to enlarge on the enormous value of the work which has proved the connexion between, for instance, malaria and the anopheles mosquito, yellow fever and the stegomyia, and plague and the rat; but it is through such means that many places in West Africa which were formerly literally death-traps are now being rendered, to say the least of it, habitable. Credit for the application of the recognised principles of tropical medicine and sanitation is due to the Colonial Office and to the local administrations of these colonies and protectorates who have consistently authorised and approved expenditure on sanitation—such as the draining of marshes, "anti-mosquito" campaigns, the demolition of insanitary areas, the reconstruction of native towns and stations, and the control of water-supplies, &c., with the intention of improving the conditions of life, not only for non-official and official Europeans, but for the African natives also.

No similar statistics are published concerning the invaliding and death-rates of non-official Europeans, including, for instance, merchants, miners, and missionaries; but a study of the Annual Medical Reports of the Colonies shows that the fall in these rates, although present, is less marked than in the case of officials. That this is unfortunately the case is due to circumstances over which the Government has little or no control. For instance, a reasonable segregation from collections of native inhabitants can be obtained for the dwellings of officials, whereas the trader commonly resides and sleeps over his store, more or less surrounded by natives, while the missionary also remains in constant touch with his flock. It is an undoubted fact that this absence of segregation is an important factor in the illnesses and mortality of such non-officials and, with the increasing importance and development of West African industries, such as gold-mining, tin-mining, and the cultivation and export of palm-oil, rubber, cocoa, &c., it cannot be too strongly impressed on African merchants and firms who send their representatives to live "on the Coast" that it is their duty, as well as to their advantage, to do all in their power to ensure at least that their employés shall sleep in buildings outside the native towns.

West African Medical Staff.

It may, I think, be fairly claimed that some credit for the improvement I have described is due to the service to which I have the honour to belong—The West African Medical Staff. This service was formed in 1902 by the amalgamation of the medical departments of the various West African administrations, and then consisted of about 110 men. In 1908 a Departmental Committee was appointed by the Secretary of State for the Colonies to consider the organisation, &c., of the staff and, following the Committee's report, several far-reaching improvements and changes were introduced. Not the least of these were the formation of a distinct sanitary branch of the staff in West Africa and the institution of an advisory medical and sanitary committee for Tropical Africa at the Colonial Office. To the sanitary department is entrusted, under the principal medical officer of each colony, the important work of dealing with epidemic and endemic disease from the point of view of the public health, and the prophylaxis of the same. Its duties are numerous and onerous, and its formation has been justified in many ways, particularly in its prompt dealing with the outbreaks of yellow fever which occurred in 1910 and 1911.

At the present time the total number of officers in the West African Medical Staff exceeds 200, the increase being necessitated by the formation of new "stations" required through the opening up of the country and the marked commercial activity which prevails, and, as far as possible, all new recruits undergo a training in tropical medicine at either the London or Liverpool Schools before leaving England for West Africa.

It is obvious that much has already been accomplished in the improvement of health conditions on the West Coast by intelligent and steady efforts; that much, however, remains to be done is well recognised, and there can be no doubt that the policy which has produced the results I have referred to will be continued in the future.

ANNUAL REPORT FOR 1910 OF THE MEDICAL OFFICER OF HEALTH OF THE ADMINISTRATIVE COUNTY OF LONDON.

II.[1]

A CONSTANT feature in the county medical officer's reports of recent years has been the prominence given to investigations by members of his staff concerning the origin and mode of propagation of enteric fever, with especial reference to infection by certain articles of food.

Enteric Fever in 1910.

Although in the metropolis generally the incidence of this disease was not excessive in the year under notice, it is reported to have been abnormally prevalent in certain of the eastern districts, especially among the very poor. It is interesting to note that of the total cases reported not less than 16 per cent. were imported from outside districts. That the diagnosis of enteric fever in the homes of the labouring classes is not always easy will appear from the circumstance that of the cases certified as enteric and admitted to the hospitals of the Metropolitan Asylums Board a considerable proportion are found to be suffering from other diseases. In the year 1909 the errors in diagnosis amounted to 37·9 per cent. of the admissions.

Outbreak of Enteric Fever in Bethnal Green.

Having regard to an abnormal prevalence of this disease in Bethnal Green, and to a less extent in Stepney and Poplar during the autumn of 1910, a special investigation of the circumstances was made by Dr. W. H. Hamer. As the inquiry proceeded it became manifest that the outbreak involved a larger area than was at first suspected, several localised prevalences, coincident in time, having been observed in Shoreditch, Islington, Holborn, Finchley, and St. Pancras, and even at Edmonton, which is outside the metropolitan area. Altogether the inquiry extended to some 300 cases occurring within the space of two months, at least two-thirds of which were apparently attributable to some special cause. The outbreak was explosive in character, the dates of onset of the several attacks suggesting that infection had been contracted almost simultaneously. Few of the cases were secondary, and there appeared to be absolute absence of intercourse or association among the sufferers in the several invaded houses. Examination of the ordinary sources of infection resulted in the elimination of the water and milk-supplies as possible causes of infection. Either fried fish or shell-fish, such as cockles and mussels, appears to have been generally regarded as responsible for the epidemic; and, as regards the Bethnal Green area, fried fish alone is stated to have been the infecting medium, every one of the 50 persons attacked having been known to be eaters of that food. It is instructive to note that the kind of fish implicated was plaice (including in this term flounders and dabs).

[1] Previous notices of this report appeared in THE LANCET, April 20th, 1912, p. 1068, and May 4th, p. 1218.

Imperfect cleansing of the fish is believed to have been an important factor in communicating infection to the consumers.

Cerebro-spinal Fever.

In the course of the year under notice 115 persons (of whom 10 died) were certified to be suffering from cerebro-spinal fever. This was not included among notifiable diseases in London until March, 1907, but in the remainder of that year 135 cases were notified, or more by 50 than the total reported in the whole of the following 12 months. Respecting all the cases notified careful investigation was made by Mr. W. M. Wanklyn, "who could discover nothing that threw light on the causation of the disease." In no single instance was any one case found to be connected with any other. It appears, further, that of the cases originally certified, in only 40 did the final diagnosis agree with that originally made; that of these 40 no bacteriological or post-mortem examination was made in 12 cases, and that in another 13 cases the disease was specified as post-basic meningitis, which is regarded as a subacute form of cerebro-spinal fever. Mr. Wanklyn concludes that out of a total of 115 only 15 cases remain in which the acute form as originally diagnosed was confirmed bacteriologically.

Puerperal Fever.

By the passing of the Midwives Act of 1902 the diseases peculiar to the puerperal state became for the first time really amenable to preventive measures. Under Section I. of that Act, which came into force in 1910, none but certified women can practise midwifery habitually for gain except under the direction of a qualified practitioner of medicine. In 1910 the number of midwives whose names appear on the London register was 3526, but of these only about 420, or 13 per cent., were in actual practice; the remaining 87 per cent. acted for the most part as monthly or general nurses under medical supervision. Of the practising midwives, 53 were working entirely within Poor-law institutions or in lying-in hospitals—of course, under medical direction. 169 others were attending patients on behalf of charitable institutions, receiving either a regular salary or else a fee for each case allotted to them. The remainder were practising independently.

The arrangements for supervising the work of midwives in London appear to be very complete, two lady medical inspectors, Miss E. Macrory, M.B., and Miss M. A. Pilliet, M.B., having been appointed by the County Council for the purpose. All practising midwives, except those acting in hospitals under medical direction, are subject to supervision by the Council's medical inspectors, in order to secure compliance with the rules of the Central Midwives Board as to cleanliness, the right use of disinfectants, the keeping of registers, and the sending of notices to the local supervising authority. In the event of a case of septic nature, or of persistent high temperature occurring in a puerperal patient, or in case of inflammation of the infant's eyes, a special visit is paid to the midwife in charge by one of the lady medical inspectors, who is always available for instruction of the midwives in matters of difficulty or of uncertainty. Occasionally the medical inspector accompanies a midwife either to a confinement or on a subsequent visit in order to ascertain whether the midwife's work is efficient. In the course of the year under notice 1571 visits to midwives were paid by the lady medical inspectors.

The notified cases of puerperal fever numbered 292 in the year under notice, and were slightly more than those notified in the preceding year. The term puerperal fever has been expunged from the nomenclature of the Royal College of Physicians, and as a substitute the preferable term "puerperal septic disease" is now used by the Registrar-General to include puerperal septicæmia, pyæmia, and sapræmia, as well as peritonitis and metritis occurring in connexion with parturition. Of the 292 notified cases, 102 proved fatal, a case mortality of 35 per cent. In addition to the deaths from puerperal septic diseases, 148 deaths from accidents of childbirth are recorded by the Registrar-General as occurring in London during 1910. Among these are included cases of eclampsia, pulmonary embolism, puerperal mania, and pneumonia occurring after confinement. We presume, however, that for preventive purposes all cases in the group last mentioned will be investigated with the same care as are cases definitely referred to puerperal fever, although the Registrar-General may still classify them separately.

Ophthalmia Neonatorum.

Under the provisions of the Midwives Act the means are now for the first time available to a sanitary authority for dealing at their source with the troubles which in past years have caused much serious impairment or loss of eyesight to the labouring classes. Sir Shirley Murphy lays great stress on the necessity for prompt medical treatment on the occurrence of inflammation of the eyes, however slight. In all cases where such help is requested by a midwife one of the Council's lady inspectors at once visits the infant in order to secure that timely medical treatment shall be supplied. During the year under notice 160 requisitions for medical aid were received from London midwives on account of inflammation of the eyes of infants. In 141 of these cases the resulting treatment was completely effectual, and in the majority of the remaining cases partial recovery took place with more or less opacity of the cornea.

Malignant Disease.

Although the mortality from cancer in its various forms was slightly lower in 1910 than in the year immediately preceding, it still considerably exceeded the average in recent previous years. In the present as in previous reports the attempt has been made to ascertain the existence of any relation between the incidence of cancer and the social condition of the patients, whether the latter be measured by the degree of overcrowding or by the percentage of children scheduled for compulsory education. For this purpose the metropolitan boroughs are arranged in five groups, and the death-rates from malignant disease in each group have been corrected as completely as possible. The result shows that neither in the year under notice nor in past years can any relation of the kind suggested be discovered. In this respect the behaviour of malignant disease differs entirely from that of pulmonary tuberculosis, the mortality from which has repeatedly been shown to depend largely on the relative state of nutrition or on the poverty of the persons affected.

Infantile Mortality.

Measured by the proportion of deaths under one year to registered births, infantile mortality in 1910 was equal to 103 per 1000, a rate which is lower than in any previous year on record. Graphic representation of the behaviour of infantile mortality in the last half-century is given in a valuable diagram which shows the mortality in each successive year in relation to the mean rate of the period 1858–1910. In the five years 1905–09 infant mortality was lower in London than in any other large English town except Bristol. Compared with foreign and colonial cities, London infantile mortality was lower than in any other city except Paris, Amsterdam, and Stockholm. An instructive table is inserted which shows the number of survivors at the beginning of each month in the first year of life, and the probability of living for one month from the commencement of each month of the first year, out of 100,000 infants born in 1910. In another table the probability is shown of living one month from the beginning of each month of life in the last six years of the decade ended in 1910. Worthy of attentive study are the increasing probabilities of living obtaining in the later years included in this table. In order to illustrate the effect of what is termed "social condition" on the rates of mortality at different periods of the first year of life another table is inserted, by which the infantile mortality in each of five groups of districts can be compared. The standard adopted for determining the "social condition" of borough populations is the percentage of children between the ages of 5 and 14 that are scheduled by the council for education purposes. With this object the metropolis has been divided out into five groups of different grades of social condition. In the boroughs comprising Group I. less than 82 per cent., and in those comprising Group V. more than 97 per cent. of the children are thus scheduled. Marked differences in the mortality among infants under 1 year of age are shown to exist when the best and worst groups of districts are contrasted. In compliance with the orders of the Local Government Board the reports of the London district medical officers contain tables showing the mortality from certain specified causes at different periods of the first

year of life. At present the numbers tabulated are comparatively small, but when similar returns are available for a considerable series of years the results will be extremely valuable for preventive purposes. Even already the steady decline in tuberculosis mortality among infants shown in the statistics for the last quinquennium are highly encouraging.

REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1910.

THIS report, the first to appear over the signature of Director-General Sir C. P. Lukis, I.M.S., follows in the main the arrangement adopted by previous Sanitary Commissioners, with the exception that the initial section on meteorology is omitted. The most important statistical matter is, however, retained in an appendix, and the chief points of climatic interest are referred to in the section on the health of the general population.

Health of the European Army in India.

The average strength of European troops in India (excluding officers) during 1910 was 72,491. Of this force, 576·5 per 1000 were admitted to hospital; 31·9 per 1000 were on an average constantly sick in hospital, 4·66 per 1000 died, and 7·77 per 1000 were invalided home. All these ratios were considerably below those for the previous year, which were the lowest that had ever been recorded before. The immense improvement that has taken place in the health of the troops within recent years is evidently not a temporary phenomenon; it has "come to stay." Every disease of importance has shared in this decrease, except tubercle of the lungs and respiratory affections. The chief cause of death is still enteric fever; but this amounted to little more than one-third of the mortality of the previous year, and less than a quarter of that of the quinquennial average for 1905–09. An important result of this marked improvement in health and lessening of the rates of invaliding and mortality has been that the number of men yearly brought out to India has been reduced, and as it is these new arrivals who are the youngest soldiers and most susceptible to disease, the reduction in their number reacts favourably on the rates of mortality, sickness, and invaliding.

The forces in India are divided into a Northern and a Southern Army. The former, with a strength of 38,006 men, has divisions at Peshawar, Rawal Pindi, Lahore, Meerut, and Lucknow, with three brigades on the Afghan frontier; the latter (32,327) has divisions at Quetta, Mhow, Poona, Secunderabad, and in Burma, with a brigade at Aden. There has always been a difference in the health statistics of these two armies, but this year it was less noticeable than usual, the northern force having had an admission rate of 616 and a death-rate of 5 per 1000, while in the Southern Army the corresponding figures were 542 and 4·21. In the former malaria (158·6 per 1000), venereal disease (54·4), and pyrexia of uncertain origin (43·4) caused the greatest number of admissions to hospital; in the latter the same three diseases were the most important, but malaria (105·7) and uncertain pyrexia (30·4) were much less frequent, and venereal disease (64·7) somewhat more so than in the northern force. Enteric fever caused 0·58 deaths per 1000 in the Northern and 0·74 in the Southern Army.

On comparing different parts of India in regard to the total amount of sickness—that is, the greatest number of men constantly sick in hospital—we find that this was as high as 44·1 per 1000 on the Western Coast (Colaba, Calicut, &c.), while in Bengal and Orissa it was only 24·5 and in the Deccan 29·4 per 1000. The admission-rate was highest in the North-West Frontier, Indus Valley, and North-West Rajputana group of stations (913·1), and lowest in Bengal and Orissa (388·5). The individual stations that have been most conspicuous for sickness have been Delhi, with an admission ratio of 1420 per 1000 and 51·8 constantly sick, and Peshawar, with 1367 admissions per 1000 and 38 constantly sick. Attock, Muttra, Agra, and Nowgong also had admission ratios of over 1000 per 1000 strength. On the other hand, Secunderabad had the lowest admission rate (262), also the lowest number constantly sick (20·5), while Rangoon, Fort William, Barrackpore, and Belgaum had less than 400 per 1000 admissions to hospital. Practically all the important unhealthy stations are in Northern India, and nearly all the healthy ones of any considerable size are in the Southern Command.

Principal Diseases.

Malaria is by far the most common cause of sickness amongst the troops, and is likely to retain this position in spite of all that has been done to remove the conditions that bring it about; 23 per cent. of the admissions to hospital were due to this cause. In addition, 6·54 per cent. of admissions were for pyrexia of uncertain origin and 1·23 per cent. for sandfly fever, a heading which appears in the present report for the first time. The total admissions for these three affections were 132, 37·7, and 7·1 per 1000 respectively. Malaria prevailed especially at Delhi, where the cases numbered 712 per 1000, Peshawar (652), and Agra (535). The year was not, however, a bad one for malaria on the whole, though Peshawar suffered more than last year from this cause. It is noted that in Peshawar and Agra the rainfall was considerably in excess of the average, and to this doubtless the prevalence of fever was due. Antimalarial measures are being vigorously carried out in all stations affected. Those directed against the parasite in the human host include the search for and discovery, the segregation under mosquito curtains in separate wards or tents, and the quinine treatment, of all soldiers, whether suffering from fever or not, who harbour parasites in their blood; a six weeks to four months course of after-treatment; and the administration of quinine twice a week as a prophylactic to all soldiers in a malarious station. The transfer of convalescent malaria cases to the hills also appeared to lessen the risk of spread. The dosage of quinine varied: in Delhi, 10 grains were given on two consecutive days of the week from May 1st to Sept. 18th; then 5 grains daily in addition until Nov. 23rd; then 10 grains twice a week until Dec. 16th. The practice generally followed was 10 grains twice a week in solution with a little magnesium sulphate from June or July to the end of November. It would seem that, now that quinine administration is being carried out on a large scale, some definite results might be arrived at as to the best dosage, by careful comparative observations under (practically) precisely similar conditions, company by company, or barrack compared with barrack. A considerable proportion of the soldiers use mosquito curtains, either at their own expense or provided from regimental funds. Antilarval operations have been systematically carried out in nearly every cantonment in the plains, a mosquito brigade supervised by a medical officer dealing with breeding places section by section. The work of Major F. Smith, D.S.O., R.A.M.C., sanitary officer for the Rawal Pindi Division, is specially alluded to. This officer collected 12 different species of anophelines and four culicines, two of these mosquitos being new species. He does not, however, speak hopefully of the results of antilarval operations so far. Captain A. B. Smallman, R.A.M.C., and Lieutenant-Colonel A. Buchanan, I.M.S., have also made quantitative estimations of the parasite in the peripheral blood at Quetta and Nagpur respectively.

Uncertain pyrexia was much less prevalent than in the year 1909; some of these cases were probably phlebotomus fever and some paratyphoid. Sandfly fever (pappatasi or phlebotomus fever) is now given a separate heading, but cases were returned as such at only ten stations, and chiefly at Peshawar and Attock. The Sanitary Commissioner states that "it appears doubtful if its great importance as a cause of sickness among European troops in India has yet been widely realised." Accordingly, a full description is given of the disease and of the characters of the various flies in India that are popularly called "sandflies," with particulars as to the identification of P. pappatasi, and the preventive measures necessary.

Venereal diseases come second in order of frequency in causing sickness, with an admission ratio of 58·9 per 1000, compared with 67·8 in 1909, 100 in the quinquennium 1905–09, and 273 in 1897–1906. This remarkable reduction is due to "earnest coöperative effort, not only between combatant and medical officers, chaplains, the authorities of the Royal Army Temperance Association and other civilian officials, but between all these and the men themselves." There is, as usual, greater prevalence in the Southern Army, especially in the Secunderabad and Burma Divisions. The system of continuous treatment is found to be most effective

in preventing relapses, and part of the reduction in number of admissions is, no doubt, due to this cause.

The most fatal disease, as usual, has been enteric fever, causing a mortality of 0·63 per 1000; but this is less than half that of the previous year (1·58), and less than a quarter of the preceding quinquennial average (2·66). After this hepatic abscess (0·48 death per 1000), circulatory diseases (0·44 per 1000, chiefly heart disease and aneurysm), pneumonia (0·25), tubercle of the lungs (0·23), and dysentery (0·23) were the chief causes of death. Cholera caused only 9 admissions and 7 deaths. Four of the cases occurred at Dinapur in June, due apparently to infected water; three cases occurred at the hill station of Landour in July, the first infection probably due to eating fruit bought in the bazaar, and the two others becoming infected from this case.

Although enteric fever, as just mentioned, is still the most fatal disease affecting British troops in India, the diminution in its prevalence has been so striking in recent years as to make the loss of service from this cause relatively insignificant at the present time. The total number of admissions was 335, giving a ratio of 4·6 per 1000 strength. In 1908 there were 11 stations in which admission-rates of over 30 per 1000 were recorded; in 1910 Benares (with 12 cases) and Naini Tal (with 10 cases) gave higher ratios than this; Landour (with 5 cases) and Khandalla (1 case) also gave apparently high ratios. With these exceptions only eight stations showed admission ratios above 10 per 1000, and the highest of these was 15·1 at Sialkot. Of the 89 stations from which statistics were received there were 30 without any fresh case during the year, and 15 in which only one fresh case was recorded. One cannot say that enteric fever has been abolished in India, but when we consider that the average admission ratio in 1891–1900 was 23·6 per 1000, in 1905–09 13·7 per 1000, and that now it is only 4·6 per 1000, its virtual extinction seems within the bounds of possibility. Preventive inoculation is entirely voluntary, but is being very largely adopted by the troops; a census was taken on June 30th, 1911, according to which, out of 72,105 men 49,670 had been "properly inoculated"—i.e., with two or more doses of vaccine.

Health of the Indian Army.

The average strength of Indian troops in 1910 was 131,274; the admissions to hospital were 572·8, the number constantly sick 21·1, deaths 4·89, and invalids 5·21 per 1000. If the deaths of men absent on furlough be included the ratio is 7·12. This is the first year on record that the death-rate has been higher in the Indian than in the European army. The constantly sick rate was slightly higher than in 1909, otherwise all the ratios are the lowest on record. The chief causes of sickness were malaria (159·7 admissions per 1000), to which may be added pyrexia of uncertain origin (28·5) and sandfly fever (3·9); then dysentery (26·2), respiratory diseases (25·8), and venereal (16·9). The most fatal affections were pneumonia (1·34 deaths per 1000), enteric fever (0·44), and respiratory diseases (0·30). As with British troops, the Northern army shows a much higher admission ratio (669·7) than the Southern (518·3 per 1000); the death-rate in the former (5·69) is also higher than in the latter (4·57), the excess being chiefly due to malaria and uncertain pyrexia, pneumonia, and respiratory diseases. The highest rates for admission to hospital were for the troops in the North-West Frontier, Indus Valley, and North-West Rajputana area (935), and for Bengal and Orissa (716); the highest constantly sick rates were on the Western Coast (30) and in the North-West Frontier, &c., area (28), in which latter region malaria was most prevalent with 361 per 1000 admissions, the next highest ratio being 224 in Southern India. The large stations that suffered most from fever were Dera Ismail Khan (828), Delhi (545), and Edwardesabad (507). It is noticeable that the Indian troops in Peshawar (with 432 per 1000 admissions) suffered less than the Europeans (652). Cholera caused only 21 admissions and 12 deaths in the whole army; there was no epidemic anywhere. Of small-pox there were only 22 cases and 1 death; this man was a recruit in whom the result of vaccination had been reported as "modified"; he was to have been revaccinated, but was allowed a few days' leave to go to his home, where he contracted confluent small-pox and died on the eighth day.

Enteric fever is becoming a more frequent diagnosis in the Indian army now that the term "remittent fever" is no longer used; in 1910 there were 329 cases diagnosed, with 58 deaths. All the instances in which ten or more cases occurred in one battalion were noted in Gurkha regiments. The enteric admission ratio for native troops on the whole (including Gurkhas) was 2·5, and for Gurkhas only, 6·1 per 1000, this being even higher than the ratio (4·6) for British troops. There was some increase compared with the previous year in plague among Indian troops; the cases were 31 (compared with 16 in 1909) and the deaths 22 (compared with 8). The numbers are in themselves very small, and the greatest prevalence in any one regiment amounted to no more than 5 cases with three deaths in the 116th Mahrattas at Bombay. It fortunately happened that in this regiment the two patients who recovered had been inoculated in the previous year, while the three who died were not inoculated; the men were impressed by the circumstance, and in less than a week 616 soldiers, 87 followers, 93 women, and 66 children were inoculated. It is to be hoped that this was made generally known throughout the army. Three cases of pneumonic plague occurred in the 51st Sikhs, the second and third cases having been in attendance on the first, a circumstance in itself regrettable, as tending to excite a suspicion of want of care on the part of the medical authorities. Scurvy is practically non-existent in the Indian army at the present day, except that at Aden and in the neighbourhood of Quetta a few cases occur year by year. In 1910 nine cases were reported from Aden and 15 from Quetta and Robat; in the year preceding the supply of fresh vegetables had been noted as deficient. No explanation is suggested in the present report. The recurrence of this preventable disease is apparently acquiesced in.

With regard to pulmonary tubercle, there has been a noteworthy reduction during recent years; the cases amounted to 2·4, and the deaths to 0·19 per 1000, this last figure being much lower than that recorded in any previous year. The Gurkha regiments have always suffered far more than the rest of the native army from this disease, but since the beginning of the last decade there has been a most marked improvement. In 1901 the admissions for the Indian army as a whole numbered 4·2, and the deaths 0·84 per 1000; for Gurkhas these ratios were 13·1 and 3·95 respectively. In 1903 the admissions and deaths for the whole army were 5·9 and 0·68, and for Gurkhas 28·9 and 2·88 respectively. Since then there has been a steady diminution, and in the year just past the Gurkhas had an admission-rate of only 3·6 and a death-rate of 0·50 per 1000, both being higher, it is true, than in the rest of the native army, but far lower than in any recent year. No explanation is given of this noteworthy circumstance; in some other regiments bad barrack accommodation is noted as a likely cause for prevalence of tubercle; a similar explanation might be hazarded in regard to the Gurkhas, and it would be interesting to learn if the diminution of tuberculous disease is due to improvement in accommodation.

Pneumonia is still by far the most frequent cause of death in the native army, but in 1910 the deaths due to this disease numbered only 176, as compared with 248 in 1909, and 279 in 1908. This is very satisfactory. Venereal diseases, though less prevalent than in former years, have been increasing since 1907; in that year the admissions were at the rate of 14·7 per 1000. In each year since there has been a slight rise up to the year now under review, when the admissions numbered 16·9 per 1000; the increase is most marked in the Gurkhas, their ratio being 22·5 per 1000 in 1910.

General Population.

The vital statistics referring to the inhabitants of India are calculated on a population of 226,438,733 as recorded at the census of 1901; from the provisional figures of the 1911 census that are now available it is seen that the rates, as calculated, are inaccurate, as indeed must inevitably be the case. The birth-rate in 1910 is stated as 39·52, and the death-rate as 33·20 per 1000; these figures may be compared with the corresponding mean ratios for the preceding five years, which were 37·61 and 35·40 respectively. All provinces showed an increase in birth-rate over the quinquennial mean, except Eastern Bengal and Assam. In regard to death-rate, although on the whole this was well below the quinquennial mean, in 7 out of the 12 provincial areas the ratio was higher. The highest mortality was in the

Central Provinces (44·88) and in the small area of Ajmer-Merwara (50·08); the lowest in Madras (24·7). Of the total 33·20, no fewer than 19·17 deaths per 1000 are returned as due to "fever"; in the United Provinces the fever death-rate was as high as 27·07; in Madras it was only 8·7 per 1000. Plague caused 1·83 deaths per 1000, a considerable increase over the ratio of 0·64 in 1909; in the Punjab the mortality was 6·74 and in the United Provinces 3·31; in the small area of Ajmer-Merwara it was 13·67; the other provinces did not suffer severely, though the ratio was higher in all (except Upper Burma) than in 1909. The total deaths from plague numbered 413,355. Cholera caused 430,451 deaths, giving a ratio of 1·90 per 1000, nearly double that of the preceding year (1·05); Eastern Bengal and Assam (3·95) and Bengal (3·21) suffered most, and the United Provinces (2·15) severely. Small-pox, with a death-rate of 0·23, was most prevalent in Madras (0·5) and in Eastern Bengal and Assam (0·35 per 1000).

Indian Jails.

The mean jail population in India, Burma, and the Andamans during 1910 was 110,455, the death-rate being 21·62, compared with 25·02 per 1000 in 1909. Excluding the Andaman Islands (where convict life conditions differ widely from those of all other Indian prisons) the death-rate was 19·29, ranging from 11·98 in Burma to 36·52 in the Central Provinces. The chief causes of death were dysentery (3·46), tubercle of the lungs (3·41), and pneumonia (2·57). The chief causes of sickness were malaria (135 admissions per 1000), abscess, ulcer, and boils (61), dysentery (58), and diarrhœa (37); all diseases (except those of the respiratory system) were less prevalent and less fatal than in 1909. The reduction in malaria has been most marked; in the three successive quinquennial periods, 1894–98, 1899–1903, 1904–08, the admission ratios have been 298·5, 238·4, and 199·5 per 1000; in 1909 the admissions fell to 172·4, and in 1910 to 134·7. This is a real reduction, due to antimalarial measures, which have been carried out with increasing thoroughness in most of the Indian jails, quinine prophylaxis being the chief. The malarial death-rate was only 0·90 per 1000. Dysentery was less prevalent and fatal than usual in 1910, the admission and death-rates being only 57·7 and 3·46 per 1000; but in Eastern Bengal and Assam the admissions were as high as 202, and in the Central Provinces the death-rate amounted to 16·26. An inquiry into the causation of this disease in jails has been undertaken by the Central Research Institute. Tubercle of the lungs was also less on the whole during 1910; but in Eastern Bengal and Assam overcrowding increased the death-rate from 3·62 in 1909 to 6·45 in 1910; and in the Punjab from 5·38 to 6·57. Every effort is made to segregate tuberculous prisoners, but lack of accommodation is the great difficulty.

Vaccination.

There was again a slight decrease in revaccination during 1910, but the primary operation was carried out more extensively in all provinces, except Eastern Bengal and Assam, Madras, and Bombay. The percentage of infants protected was 46·44, an increase on the previous highest record of 44·36 in 1907–08. The percentage of successes in primary cases varied between 99·07 in Bengal and 87·57 in Madras; the former compares well with that obtained at the Local Government Board lymph establishment in London, which for 1909 was 99·4.

Medical Institutions.

Statistics are given of 2670 hospitals and dispensaries, at which the in-patients relieved numbered 453,901; the operations performed were 1,089,899, and the out-patients treated reached a total of 27,889,469. Besides these there are also 1483 private, railway, and "state special" institutions, at which an additional 6,751,231 patients were treated, and a number of lunatic asylums accommodating on an average 5784 patients, of whom 2031 were criminal lunatics.

Sanitary Works.

Progress steadily continues in the provision of pure water-supplies and efficient drainage for the larger towns throughout the country, and considerable sums have been allocated to these purposes. An interesting departure is being made in the United Provinces in the direction of town-planning; sites will be provided (at Allahabad, Lucknow, and elsewhere) on which areas will be blocked out, and sold on favourable terms to persons wishing to build houses according to rules to be framed by the municipality concerned; they must be within the means of the poor, and therefore of cheap material and rough workmanship, but elementary sanitary rules of construction must be complied with as to ventilation, drainage, protection from rats, &c.

Scientific Work.

The record of research work in various brances of preventive medicine increases year by year. Much of this has been already alluded to in these columns when reviewing the scientific memoirs of the Indian Medical Service and local sanitary reports. A second malarial conference was held at Bombay last November; the opinion was expressed *inter alia* that anti-mosquito measures may not prove so costly as was at one time feared; that a combination of several measures may often be indicated, quinine prophylaxis being difficult to carry out thoroughly in a free population; and that education of the people by school instruction and by lectures and lantern demonstrations in villages is a most important matter.

MEDICINE AND THE LAW.

A Medical Protection Society and the Question of "Maintenance."

THE London and Counties Medical Protection Society recently appeared in the Court of Appeal as appellants against an injunction granted by Mr. Justice Bucknill at judges' chambers restraining the society from "unlawfully maintaining" one of its members in an action pending between him and another medical man. The action in question is one for libel, and in the ordinary course should be tried at the coming Bedford assizes in the first week of June. The plaintiff is a member of the London and Counties Medical Protection Society, which was admitted in the Court of Appeal to have undertaken the conduct of his action, after having offered to arbitrate between him and the defendant, and to have done so in accordance with the principles for which it was instituted. The defendant claimed and obtained an injunction, as mentioned above, and the society appealed. It was held, after argument, that the appeal should be allowed, as the facts disclosed with regard to the relations between the society and its member and the position of the former with regard to the suit of the latter did not constitute such proof of maintenance as would justify an injunction. This, if we rightly understand the decision, was not to the effect that the society was not illegally maintaining its member in his libel action, but only that it was not a case in which it would be proper to interfere at once with what was going on and put a stop to it by an injunction. The trial of an action for maintenance against such an association as the London and Counties Medical Protection Society in a case such as that described of intervention by it in a medical man's lawsuit would be of considerable interest to the medical profession, and comment upon the prospects of such an action would be out of place.

Interference with Medical Referees.

His honour Judge Mellor recently drew attention to a complaint which he had received in connexion with a case referred by him to a medical referee under the Workmen's Compensation Act. He desired to call the attention of the press to the fact that it was improper for anyone to attempt to communicate with the medical referee by letter or otherwise with regard to any case so referred. The applicant or respondent had a right to appear before the medical referee with his adviser and, if desired, to present himself for examination. Reports of medical evidence given at the hearing were usually sent to the medical referee, but for anyone to forward anything not asked for was highly improper, as the referee, occupying a judicial position in the matters laid before him, had to preserve an unbiassed mind. Little need be added in comment, and it is to be hoped that such instances are rare. It will be realised, moreover, that justice need not be affected by the fact that no communication of the kind indicated should be made to a judge or referee. If anyone has information in his possession which is material to the issue, and the suppression of which might

lead to a miscarriage of justice, the parties are there and their legal advisers. It is to the side whose interest will be served by evidence in the possession of a third party that any communication with regard to it should be made, and no one will make it, naturally, who is not prepared to substantiate his assertion if called upon to do so.

THE LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

Medical Aspects of the Annual Estimates.

THE greater part of the sitting of the London County Council on May 14th was spent in considering the estimates of the cost of maintaining the various public services during 1912–13. Estimates were approved in respect of asylum maintenance amounting to £269,651, and some discussion took place as to whether the sum—£50,000—allotted to upkeep of buildings was adequate to meet the requirements of the Commissioners in Lunacy and the Home Office. In particular, the suggestion was made that the duties of the medical officers would be lightened if the telephone systems at some of the asylums were improved, they having been installed nearly 30 years ago. An estimate of £705 was passed to meet the cost to the Council of the administration of the Midwives Act, 1902, and the estimates of the Public Health Committee, amounting to £109,854, were approved without any discussion. From the latter estimates it appeared that the examination of samples of milk costs £2855 a year, and the administration of the various Dairies, Cowsheds, and Milkshops Orders issued by the Local Government Board £2300.

Ambulance Service for London.

The General Purposes Committee had set down an item of £100, as "provision money" to meet any expenditure to which the Council might be put during the year in the preparation of a scheme for providing an ambulance service for London.

Mr. A. WILSON inquired what steps had been taken since the passing of the Metropolitan Ambulances Act, 1909, to organise this much desired service.

The CHAIRMAN having ruled, under advice from the Clerk, that an item of "provision money" could not be discussed,

Mr. H. L. JEPHSON moved the adjournment of the Council as a protest against the way the General Purposes Committee had delayed the progress of the matter. He had been put off since February, 1910, with indefinite replies when he inquired from time to time what steps were being taken. When asked whether he would bring up a report in time for a sum to be included in the estimates for 1912–13, the chairman said: "I am unable to pledge the committee to bring up a report by a given date, but provision has been made in the estimates for any expenditure likely to be made during the current year." The only provision was the item of £100. A committee, Mr. Jephson said, ought not to stand between the Council and the discussion of an important question: 17,000 people were injured every year, and about 300 killed, through accidents in the streets of London. Proposals for dealing with the matter had been deliberately postponed, and on the only occasion when a question of policy could be discussed the estimate was brought up in such a form that no debate was possible. The committee had burked the question for three years. Parliament had had the matter under consideration, and had declined to pass Mr. Peel's Bill making the Metropolitan Asylums Board responsible, and had passed instead Sir William Collins's Bill which made the London County Council the ambulance authority for London.

Mr. H. J. GREENWOOD, chairman of the committee, said he was quite prepared to admit that owing to circumstances over which he had no control it had not been possible to keep his word and bring up a report in time for the estimates. The matter, however, had been before the committee, and he certainly hoped that in course of time a report would be presented. The question was one of great magnitude and not one on which the Council would wish to embark without making exhaustive inquiries on the working of ambulances throughout London. This had taken a considerable time, but it could not be said that the committee desired either to burke the question or postpone its consideration. In the course of time he hoped the committee would be ready. As to the form of the estimate, the stage reached was not one entitling the committee to put down any definite sum.

The motion for the adjournment was lost, and the estimate was then approved.

Scarcity of Vacancies in Asylums.

Mr. A. WILSON asked the chairman of the Asylums Committee whether he was aware of the existence of a circular letter sent by the County Council to the boards of guardians stating that there were no vacancies in the county asylums for persons certified as insane. Was he aware that this was causing overcrowding in the observation wards of infirmaries, and what steps were being taken to obviate it?

Mr. GOODRICH, the chairman, replied that there had been within the last few days a scarcity of vacancies at the asylums for male patients, but no case of lunacy had been kept waiting for more than six days. He was informed that no authority had more than three cases waiting. The committee had already taken steps to obtain contracts with out-county asylums, and it was expected that the temporary pressure would shortly be relieved.

A Bethnal Green Insanitary Area.

Mr. EDWARD SMITH asked the Chairman of the Housing Committee whether the Council had received urgent representations from the metropolitan borough of Bethnal Green, through its medical officer, asking that the Council would deal with the insanitary area known as the Brady-street district, where, according to the medical officer, there were 528 houses, mostly unfit for human habitation, accommodating 3058 persons. The death-rate for the area was 25 per 1000, against 17 for the whole of Bethnal Green. The death-rate per 1000 from zymotic diseases was 4·4, against 1·7 for the whole of Bethnal Green; from tubercular diseases 3·7, against 2·0; and diseases of the respiratory organs 6·3, against 3·8 for the whole borough. The number of deaths from these causes was double that of the whole borough. Would the committee consider the area with a view to an improvement scheme?

The CHAIRMAN promised a report on the subject as soon as possible.

The Reorganisation of the Public Health Department.

The General Purposes Committee reported as to the amendment of the designations of several of the principal officers consequent on the fusion of the general and education branches of the Public Health Department and the appointment of a deputy medical officer of health and school medical officer.[1] The committee proposed that Dr. J. Kerr, the medical officer (education), should be styled in future "medical research officer," and it understood that Dr. Kerr considered this title appropriate. Dr. C. J. Thomas and Mr. W. McC. Wanklyn were now styled "assistant medical officers." This designation should remain unchanged, but it should also be applied to the part-time officers now styled "assistant medical officers (education)." The officials concerned offered no observations on the suggested alteration of their designation.

The Council approved these recommendations.

The Coronership of the South-Western District.

The Council approved the appointment of Dr. S. Ingleby Oddie as coroner for the South-Western District of London, at a salary of £1150 a year.[2] The suggestion was made that the Council would be following the precedent established in the case of the appointment of a successor to the late Dr. Danford Thomas if it appointed Mr. R. Henslowe Wellington, who has acted as deputy to Mr. Troutbeck, but the Chairman of the Public Control Committee recommended Dr. Oddie as a candidate of exceptional merit, and the Council came to a unanimous decision.

Dr. ODDIE attended and signed the declaration on taking office. In reply to the congratulations of the chairman, Lord Cheylesmore, he said the coronership was one for which he had tried to qualify himself for many years, and he hoped the experience he had gained as a deputy coroner, a barrister, and a medical man would help him to carry out the duties to the satisfaction of the Council and of the public whom he would be serving.

[1] THE LANCET, July 29th, 1911, p. 311.
[2] THE LANCET, May 11th, 1912, p. 1293

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on May 9th, Sir THOMAS BARLOW, Bart., K.C.V.O., President, being in the chair.

The following Members who had been elected at the previous Comitia were admitted to the Fellowship: William Bain, M.D. Durh. (Harrogate); Edward John Cave, M.D. Lond. (Bath); Robert Briggs Wild, M.D. Lond. (Manchester); Henry John Davis, M.B. Camb.; John Roger Charles, M.D. Camb. (Clifton, Bristol); Frank Charles Shrubsall, M.D. Camb.; Arthur John Jex-Blake, M.B. Oxon.; and Charles Scott Sherrington, M.D. Camb., F.R.S. (Liverpool).

The following gentlemen, who had passed the requisite examinations, were recommended for the Diploma in Tropical Medicine (in conjunction with the Royal College of Surgeons of England):—Solimsee Azmy, L.R.C.P., M.R.C.S.; Henry Robert Brown (Major I.M.S.), L.R.C.P. & S. Edin., L.F.P.S. Glasg.; Ardeshir Koyaji Contractor, L.R.C.P., M.R.C.S., M.B. Lond.; William Alfred Murray, M.B., C.M. Aberd.; Denis Joseph FitzGerald O'Donoghue (Captain R.A.M.C.), L.R.C.P. & S.I.; James Charles Stewart Oxley (Captain I.M.S.), L.R.C.P., M.R.C.S., F.R.C.S. Edin.; Reginald Oliver Sibley, L.R.C.P., M.R.C.S., M.B. Lond.; and Satyendra Nath Roy, M.B. Calcutta, F.R.C.S. Edin.

A report was received from the representative of the College on the Medical Board of the University of Wales (Dr. F. T. Roberts).

The PRESIDENT then dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

AN ordinary meeting of the Council was held on May 9th, Mr. RICKMAN J. GODLEE, the President, being in the chair.

Colonel J. J. Pratt, I.M.S., was introduced, and after signing the by-laws he was admitted a Fellow of the College.

Mr. Arthur Hopewell-Smith was introduced and the President handed him a cheque for the amount of the John Tomes prize for 1909 to 1911, together with a document declaratory of the award.

Mr. Alan Cecil Perry, after signing the roll of Begley students, was introduced and the President handed him a cheque for the amount of the first year's payment in respect of his studentship, together with a document declaratory of the award.

The PRESIDENT reported the death on April 20th of Dr. Elie D. H. Lambotte, of Brussels, an Honorary Fellow of the College, and stated that he had written to the members of the family to express the sympathy and condolence of the Council.

It was resolved to grant diplomas of Membership to 95 successful candidates.

It was resolved to grant in conjunction with the Royal College of Physicians Diplomas in Tropical Medicine to eight successful candidates.

It was resolved that the Jacksonian prize should not be awarded and that the dividend should be added to the capital of the fund. The following subject was chosen for the Jacksonian Prize of the year 1913, "Malformations of the Small Intestine, their Mode of Origin, the Morbid Conditions which Arise from them, and their Treatment." The prize is open only to Fellows and Members of the College.

Sir ALFRED PEARCE GOULD presented, on behalf of Dr. R. C. PRIESTLEY, a lithotomy knife of the late Sir William Fergusson, on which had been cut a notch for each occasion on which he had used the knife for that operation.

The Chairman of the Library Committee reported that Professor Weliaminoff, of St. Petersburg, Honorary Fellow of the College, had presented to the library 21 volumes of the *Archives de Chirurgie*, of which he is editor, two volumes on "The Finsen Treatment," and one volume on "Syphilis of the Joints." The best thanks of the Council were given to Professor Weliaminoff for his gift.

A letter was read from Sir Archibald Geikie, President of the Royal Society, referring to a proposed memorial to the late Lord Lister. The President was authorised to represent the College and to nominate other representatives to serve on a committee to arrange the design of a memorial.

Public Health.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

On the Sanitary Circumstances and Administration of the Urban District of Blaenavon, by Dr. MORGAN J. REES.[1]—We have seldom seen in recent years an account of an industrial district, even in a coal-mining area, which is so discouraging as that given in this report. Blaenavon stands at the upper end of the valley of the Afon Lwyd in the north-western part of Monmouthshire. Its population is some 12,000, mainly coal-miners employed by a company which appears to have been the reverse of prosperous in some of its undertakings. Out of 2377 dwellings, 1813 do not exceed £8 per annum in rental value. The population is increasing, but building enterprise has not kept pace with the increase. Many cases of overcrowding are reported. "At Slope Cottage a family of five members, consisting of man and wife, two sons, 16 and 13 years of age, and one daughter 18 years of age, occupy the one bedroom. The room is entirely in the roof, and is without through ventilation." "The house is very dilapidated." In another case, one of a row of small back to earth cottages, "this house is occupied by eight people—viz., a man and wife, two sons, 14 and 8 years of age, and four daughters, 17, 12, 2, and 4 months respectively. It is very dilapidated. On the ground floor the stones paving the floor are broken, scarcely one being whole, and the earth is exposed throughout; the walls are cracked and bare of plaster in places. There are two bedrooms upstairs, in one of which sleep the man, wife, and four children, including the daughter, aged 17 years, and in the other a girl aged 12 and a boy aged 14. These rooms are also in a bad state of repair." Many other cases of a similar kind are referred to. The house property as a whole is of very poor character, and much of it has become unwholesome and insanitary owing to faults in original construction and to dilapidations which have been allowed to occur without any attempt at repair. Owing to the demand for houses comparatively high rents are being paid for such dwellings, little less, indeed, than those paid for decent dwellings which have been recently built. The people have become so accustomed to the conditions of these small, ill-ventilated, and overcrowded rooms that they often appear callous and indifferent towards them. Insufficient window area, unpaved yards, and defective spouting are common. One thousand houses are said to be without separate closet accommodation, one closet being shared by two or three houses. Some houses are without closet accommodation of any kind.

The local authority possess waterworks, which consist of a number of small independent reservoirs, each impounding water from a local spring. The spring water is in some cases of doubtful quality, but with efficient filtration and storage it would probably be capable of providing a supply of reasonable purity, although insufficient in amount for the needs of the district. Instead of this, however, the impounding reservoirs have been allowed to become grossly polluted, and the so-called filtration, adopted in one or two cases, tends to make matters worse instead of better. The pollution which occurs is partly due to organic matter of peaty and other vegetable origin, but partly also to miscellaneous contamination resulting from the want of fencing round the reservoir and from leaks in its walls. Reservoir "No. 1" is stated not to have been cleaned out for 14 years. The analyses of the water supplied to the houses show such surprising figures as 0·6 to 0·8 part of albuminoid ammonia per 100,000; 0·03 to 0·18 part of oxygen absorbed in four hours; and 0·02 to 0·08 of nitrogen estimated as nitrates. The expenditure which would now be necessary to place these local supplies in a satisfactory condition is considerable,

[1] Reports on Public Health and Medical Subjects. New Series. No. 62. London: Wyman and Sons. Edinburgh: Oliver and Boyd. Dublin: E. Ponsonby. Price 4d.

and probably the district council, if it can be induced or compelled to do anything in the matter, would be well advised to provide entirely new works, or to make an agreement to draw water from the mains of the Abertillery Water Board, which pass through the upper portion of Blaenavon.

On the subjects of sewerage and excrement disposal Dr. Morgan Rees has no better story to tell. Along the course of the Afon Lwyd masses of fæcal matter are frequently to be seen on its banks near the outlets of the many house drains which discharge into the river. A disgusting stench arises during the hot weather in the neighbourhood of houses close to these outfalls. Some of the old sewers pass under houses, and, as the latter are not protected against the entry of ground air, sewer gasses are liable to find their way into them. Isolated houses are generally provided with sentry-box privies, the seats in which are placed over holes dug in the ground or over the course of some brook or ditch. House refuse is collected by the district council's scavengers, but is dumped in undesirable places; slaughter-houses, common lodging-house, and cowsheds share in the general results of sanitary neglect; there is no hospital provision for the isolation of cases of infectious disease. It is certainly not too much to say, with Dr. Morgan Rees, that the urban district of Blaenavon "lacks all those essentials of good sanitary provision and management which, when combined, do so much to make the life of a community happy and contented." The report was written before the recent strike directed so much public attention to the circumstances of the colliery populations and the causes of unrest among them, and it reveals an aspect of the case which deserves more attention than it has received from those who are endeavouring to reach the foundation of this branch of labour agitation. It is difficult to believe that the people of this town, if properly guided, assisted, and occasionally coerced, could not during all these years have been got to interest themselves in providing the ordinary decencies and amenities of life and in improving the condition of the place in which they live. That they have not done so, and that such circumstances as those related in this report should so long have been tolerated, must be put on the wrong side of the balance when judging the results of our methods of "local government."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 95 largest English towns having an estimated population of 17,639,816 persons in the middle of this year, 8522 births and 4795 deaths were registered during the week ending May 11th. The annual rate of mortality in these towns, which had declined from 14·5 to 13·9 per 1000 in the three preceding weeks, increased to 14·2 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual death-rate in these 95 large towns averaged 14·1 per 1000, and was 0·4 per 1000 in excess of the average rate recorded in London during the same period. The annual death-rates in the several towns last week ranged from 3·9 in Edmonton and in Southend-on-Sea, 5·4 in Enfield, 6·9 in Ilford, and 7·1 in Swindon, to 22·2 in Salford, 22·3 in Ipswich, 22·5 in Middlesbrough, 24·1 in Barnsley, and 25·3 in Dewsbury.

The 4795 deaths from all causes in the 95 towns were 80 in excess of the number in the previous week, and included 411 which were referred to the principal epidemic diseases, against 400 and 404 in the two preceding weeks. Of these 411 deaths from the principal epidemic diseases, 139 resulted from whooping-cough, 131 from measles, 66 from infantile diarrhœal diseases, 43 from diphtheria, 19 from scarlet fever, and 13 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·2 per 1000, and corresponded to the rate in each of the two preceding weeks. The deaths attributed to whooping-cough, which had declined from 149 to 132 in the three preceding weeks, rose to 139 last week, and caused the highest annual death-rates of 1·6 in Walthamstow and in Rotherham, 1·9 in Stockport, and 2·0 in Wakefield and in Aberdare. The deaths referred to measles, which had decreased from 164 to 138 in the three preceding weeks, further declined to 131 last week; the highest annual death-rates from this cause were 1·9 in Merthyr Tydfil, 2·4 in Newport (Mon.), 2·7 in Salford and in Darlington, 3·7 in Cardiff, and 5·6 in Ipswich. The fatal cases of diarrhœa and enteritis among infants under 2 years of age, which had increased from 40 to 65 in the three preceding weeks, were 66 last week, and included 21 deaths in London, 6 in Liverpool, 5 in Birmingham, 5 in Sheffield, and 3 each in Stoke-on-Trent, Rochdale, and Rhondda. The deaths attributed to diphtheria, which had been 31, 35, and 37 in the three preceding weeks, further rose to 43 last week; 16 deaths were recorded in London and its suburban districts, 4 in Manchester, and 3 in Portsmouth. The deaths referred to scarlet fever, which had been 22, 15, and 15 in the three preceding weeks, rose to 19 last week, and included 3 in London, 2 in Manchester, and 2 in Preston. The fatal cases of enteric fever, which had been 17, 10, and 17 in the three preceding weeks, were 13 last week, and of this number 4 were registered in London and 2 in Salford.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had steadily decreased from 1384 to 1214 in the eight preceding weeks, had increased to 1242 on Saturday last; 168 new cases of this disease were admitted to these institutions during the week, against 142, 144, and 158 in the three preceding weeks. These hospitals also contained on Saturday last 983 cases of diphtheria, 653 of whooping-cough, 304 of measles, and 36 of enteric fever, but not one of small-pox. The 1226 deaths from all causes recorded in London were 38 in excess of the number in the previous week, and were equal to an annual death-rate of 14·1 per 1000. The deaths referred to diseases of the respiratory system, which had been 245, 223, and 226 in the three preceding weeks, further rose to 244 last week, and were 12 in excess of the number recorded in the corresponding week of last year.

Of the 4795 deaths from all causes in the 95 towns, 161 resulted from different forms of violence and 380 were the subject of coroners' inquests. The causes of 34, or 0·7 per cent., of the deaths registered last week were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and its 14 suburban districts, in Manchester, Sheffield, Leeds, Bristol, Bradford, Hull, Nottingham, and in 55 other smaller towns. The 34 uncertified causes of death last week included 6 in Birmingham, 4 in Liverpool, 4 in South Shields, 3 in Bootle, and 2 each in Stoke-on-Trent, West Bromwich, and Southport.

HEALTH OF SCOTCH TOWNS.

In the 18 largest Scotch towns, with an aggregate population of 2,182,400 persons in the middle of this year, 1199 births and 665 deaths were registered during the week ending May 11th. The annual rate of mortality in these towns, which had been 16·2 and 15·6 per 1000 in the two preceding weeks, rose to 15·9 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual rate of mortality in these Scotch towns averaged 16·1 per 1000, and was 2·0 per 1000 in excess of the rate recorded in the 95 large English towns during the same period. The annual death-rates in the several Scotch towns last week ranged from 8·4 in Partick, 9·3 in Hamilton, and 10·6 in Coatbridge, to 19·6 in Dundee, 21·0 in Kilmarnock, and 23·3 in Ayr.

The 665 deaths from all causes were 13 in excess of the number in the previous week, and included 55 which were referred to the principal epidemic diseases, against 65 and 75 in the two preceding weeks. Of these 55 deaths, 23 resulted from measles, 15 from whooping-cough, 8 from infantile diarrhœal diseases, 5 from scarlet fever, 3 from diphtheria, and 1 from enteric fever, but not one from small-pox. These 55 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·3 per 1000, or 0·1 per 1000 above that recorded in the 95 large English towns. The deaths attributed to measles, which had been 41, 32, and 49 in the three preceding weeks, declined to 23 last week, and included 6 in Edinburgh, 4 in Glasgow, 4 in Dundee, 3 in Paisley, and 3 in Motherwell. The deaths referred to whooping-cough, which had declined from 18 to 9 in the three preceding weeks, rose to 15 last week; 3 deaths were recorded in Glasgow, 3 in Edinburgh, 3 in Dundee,

and 2 in Coatbridge. The fatal cases of diarrhœa and enteritis among infants under two years of age, which had been 12 and 10 in the two preceding weeks, further declined to 8 last week, and comprised 5 in Glasgow, 2 in Paisley, and 1 in Dundee. The 5 deaths attributed to scarlet fever were slightly in excess of the numbers in recent weeks, and included 3 in Glasgow. The deaths referred to diphtheria numbered 3, against 4 in each of the two preceding weeks; 2 deaths were registered in Glasgow and 1 in Dundee. The fatal case of enteric fever occurred in Aberdeen.

The deaths referred to diseases of the respiratory system, which had been 106, 104, and 109 in the three preceding weeks, declined to 87 last week; and 31 deaths resulted from different forms of violence, against 27 and 22 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,157,014 persons in the middle of this year, 605 births and 442 deaths were registered during the week ending May 11th. The annual rate of mortality in these towns, which had been 23·3, 20·3, and 20·2 per 1000 in the three preceding weeks, further declined 19·9 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual rate of mortality in these Irish towns averaged 20·9 per 1000; in the 95 large English towns during the same period the mean annual death-rate did not exceed 14·1; while in the 18 Scotch towns it was equal to 16·1 per 1000. The annual death-rates in the several Irish towns last week were equal to 25·1 in Dublin (against 14·1 in London), 15·3 in Belfast, 21·1 in Cork, 21·7 in Londonderry, 16·3 in Limerick, and 17·1 in Waterford, while in the 16 smallest of these towns the mean annual death-rate did not exceed 18·4.

The 442 deaths from all causes were 7 fewer than the number in the previous week, and included 42 which were referred to the principal epidemic diseases, against numbers rising from 40 to 49 in the four preceding weeks; of these 42 deaths, 15 resulted from measles, 10 from whooping-cough, 8 from diarrhœal diseases, 5 from scarlet fever, and 4 from diphtheria, but not one from enteric fever or from small-pox. These 42 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·9 per 1000; the death-rate from these diseases last week did not exceed 1·2 per 1000 in the 95 large English towns, while in the 18 Scotch towns it was equal to 1·3 per 1000. The deaths attributed to measles, which had been 13, 16, and 15 in the three preceding weeks, were again 15 last week, and comprised 14 in Dublin and 1 in Belfast. The deaths referred to whooping-cough, which had increased from 7 to 15 in the three preceding weeks, declined to 10 last week, and included 6 in Belfast and 2 in Portadown. The fatal cases of diarrhœa and enteritis, which had been 13 and 10 in the two preceding weeks, further declined to 8 last week, all of which related to infants under two years of age; 4 deaths were registered in Dublin and 4 in Belfast. The 5 deaths attributed to scarlet fever, all of which were recorded in Dublin, were slightly in excess of recent weekly numbers. Three of the fatal cases of diphtheria occurred in Dublin and 1 in Belfast.

The deaths referred to diseases of the respiratory system, which had steadily decreased from 135 to 102 in the four preceding weeks, numbered 103 in the week under notice. Of the 442 deaths from all causes in the 22 Irish towns 151, or 34 per cent., occurred in public institutions, and 9 resulted from different forms of violence. The causes of 10, or 2·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent.

BELFAST OPHTHALMIC HOSPITAL.—At the annual meeting of the supporters of this hospital, held on May 13th, it was reported that during the past year 1724 new eye cases and 900 new ear, nose, and throat cases had been treated in the extern department, and that 164 patients were admitted into the intern wards; that is, in all, 2788 cases were treated throughout the 12 months. Financially the debit balance of £175 had now been reduced to £123.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Order in Council of April 1st, 1881, Fleet-Surgeon Edgar Fairbank Mortimer has been placed on the Retired List at his own request.

The following appointments have been notified:—Fleet-Surgeons: G. T. Collingwood to the *Good Hope;* and M. P. Jones to the *Racer*, additional, for Royal Naval College.

The undermentioned Staff-Surgeons have been advanced to the rank of Fleet-Surgeon in His Majesty's Fleet:—William Rudolf Center, Walter Scott Harcourt Sequeira, John Charles Groscort Reed, Elystan Glodrydd Evelyn O'Leary, William Elmes Mathew, Matthew Livingston Mitchell Vaudin, John William Craig, William Ludgate Martin, and Sydney Croneen.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel A. J. Luther, at present holding charge of the Military Hospital at Cahir, has been selected to command the Military Hospital at Fermoy, in succession to Lieutenant-Colonel W. C. Beevor, C.M.G., transferred to the Royal Infirmary, Dublin. Lieutenant-Colonel J. Donaldson, on arrival in India, has been appointed to the Station Hospital at Campbellpore. Lieutenant-Colonel P. C. H. Gordon, senior medical officer of the Western Coast Defences, Pembroke Dock, has been selected for the increased rate of pay under Article 317 of the Royal Warrant. Lieutenant-Colonel E. Eckersley, Deputy Assistant-Director-General at the War Office, has been detailed for service abroad during the coming trooping season. Lieutenant-Colonel H. S. McGill has arrived home tour-expired from Secunderabad. Lieutenant-Colonel J. W. Bullen has been transferred from the Convalescent Depôt at Wellington to Maymyo, Burma, to command the Station Hospital. Lieutenant-Colonel A. A. Sutton, D.S.O., senior medical officer at Sierra Leone, has arrived home on leave of absence from West Africa.

Major P. C. Douglass has joined for duty at Jubbulpore. Major A. D. Jameson, specialist in dermatology and venereal diseases, has been transferred from Meerut Cantonment to Chakrata, United Provinces. Major L. W. Harrison, specialist in bacteriology at the Military Hospital, Rochesterrow, has been placed under orders for service abroad during the coming trooping season. Major E. M. Morphew has been transferred from Preston to the Military Hospital at Bury. Major R. W. Clements has been appointed to the charge of the Enteric Fever Convalescent Depôt at Wellington. Major A. E. Smithson, on arrival in Ireland from South Africa, has been appointed for duty in the Dublin District. Major G. G. Delap, D.S.O., instructor at the Royal Army Medical Corps Depôt, Aldershot, has been placed under orders for foreign service during the coming trooping season. Major H. P. W. Barrow has taken up duty as Sanitary Officer in Bermuda and has been placed in charge of the Military Hospital at Up Park Camp. Major W. L. Baker has been appointed Specialist in Ophthalmology and Embarkation Medical Officer at Malta.

Captain W. W. Boyce has been appointed Staff Surgeon at Lahore. Captain E. G. Ffrench has taken over charge of the Cantonment General Hospital at Ahmednagar. Captain F. A. H. Clarke has been appointed to Glasgow for recruiting duties. Captain H. H. A. Emerson has taken up duty at Derby as Adjuvant of the Royal Army Medical Corps School of Instruction. Captain V. C. Honeybourne has been transferred from the Military Hospital at Agra for a tour of duty with the Aden Brigade. Captain W. R. Galwey has joined at Wellington as Sanitary Officer of the Ninth (Secunderabad) Division. Captain A. T. Frost, specialist in dermatology and venereal diseases to the Dublin District, has been detailed for service abroad during the coming trooping season. Captain D. B. McGrigor has been appointed Specialist in Electrical Science and Radiography to the Seventh (Meerut) Division. Captain J. B. Hanafin has been transferred from the Second (Rawal Pindi) Division to the First (Peshawar) Division. Captain A. E. G. Fraser has taken up duty at Khartoum. Captain R. A. Bryden has arrived home for duty from South Africa, tour-expired.

INDIAN MEDICAL SERVICE.

The King has approved of the promotion of the following officer of the Indian Medical Service:—Captain to be

Major: Leonard Joseph Montagu Deas (dated Dec. 28th, 1911).

The promotion of the undermentioned Majors to their present rank has effect from Dec. 28th, 1911:—James Drummond Graham, Cuthbert Allan Sprawson, Maxwell MacKelvie, William Henry Cazaly, Walter Valentine Coppinger, William Mitchell Houston, William David Acheson Keys, Alexander Chalmers, and Samuel Robert Godkin.

The King has also approved of the retirement of Colonel Douglas ffrench-Mullen (dated March 25th, 1912).

Lieutenant-Colonel H. W. Pilgrim, superintendent and senior surgeon of the Presidency General Hospital at Calcutta, has been granted privilege leave of absence, combined with furlough for 18 months home from India. The services of Lieutenant-Colonel F. O'Kinealy, lately surgeon to His Excellency the Viceroy, have been placed at the disposal of the Government of Bengal. Lieutenant-Colonel P. J. Lumsden has arrived home on leave of absence from Bengal.

Major J. K. Bamfield has been selected for appointment as Specialist in Midwifery and Diseases of Women and Children in the Second (Rawal Pindi) Division. The services of Major C. M. Mathew have been placed at the disposal of the Government of India for employment as Medical Storekeeper in Madras Presidency. Major H. Ainsworth, professor of ophthalmic surgery at the Medical College, Lahore, has been granted three months' combined leave of absence. Major E. J. O'Meara, civil surgeon at Naini Tal, has been detailed for special duty on the staff of the Lieutenant-Governor of Bengal. Major R. G. Turner has arrived home on leave of absence from Bengal.

Captain A. F. Baboneau, plague medical officer at Gurgaon, has been transferred to the Ambala District. Captain H. S. Hutchison has taken up duty as Officiating Personal Assistant to the Surgeon-General with the Government of Bombay. Captain W. E. Brierly has been granted seven months' leave of absence home on medical certificate. Captain J. L. Lunham has been appointed to officiate as Civil Surgeon at Belgaum. Captain J. M. Holmes has been granted an extension of leave on medical certificate for one month. Captain W. H. Riddell has arrived home on leave of absence from India. The services of Captain H. Watts, plague medical officer in the Punjab, have been placed at the disposal of the Government of India, Home Department. Captain P. S. Mills, plague medical officer at Delhi, has been transferred to the Hoshiarpur District. Captain A. J. H. Russell has been granted an extension of leave on medical certificate for five months. Captain I. M. Macrae has been confirmed in the appointment of Superintendent of the Central Prison at Lucknow.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Highland Mounted Brigade Field Ambulance, Royal Army Medical Corps: Alexander Fraser Lee to be Lieutenant (dated March 8th, 1912).

Notts and Derby Mounted Brigade Field Ambulance, Royal Army Medical Corps:—The undermentioned officers to be Captains (dated April 1st, 1912): Lieutenant William H. Rowell and Lieutenant Walter H. Fisher.

1st North Midland Field Ambulance, Royal Army Medical Corps: Lieutenant Frederick R. Bremner to be Captain (dated April 2nd, 1912). Lieutenant James D. Allen to be Captain (dated April 4th, 1912).

Attached to Units other than Medical Units.—Captain John Cumming to be Major (dated March 29th, 1912). Major (Honorary Captain in the Army) George G. Oakley resigns his commission, and is granted permission to retain his rank and to wear the prescribed uniform (dated May 11th, 1912). Captain Wilfred E. Alderson resigns his commission (dated May 11th, 1912).

For Attachment to Units other than Medical Units.—Herbert Meggitt (late Captain, Royal Army Medical Corps (Territorial Force)), to be Captain (dated March 25th, 1912). Thomas Carnwath (late Lieutenant, Royal Army Medical Corps, Special Reserve) to be Lieutenant (dated April 10th, 1912).

THE JAPANESE NAVAL MEDICAL DEPARTMENT IN THE RUSSO-JAPANESE WAR

In the *Archives de Médecine et Pharmacie Navales* for March, Dr. Chemin, Médecin de 1re Class (Staff-Surgeon) in the French Navy, presents another instalment of his valuable translation of the Japanese official report of the performances of the Naval Medical Department in the Russo-Japanese war. Accounts of their proceedings are given by the medical officers of many ships, and each has its own individuality, yet a general statement may be made as to the usual Japanese method of dealing with the wounded. As to first-aid, the stretcher-parties were taught how to deal with wounds, especially not to touch them, and to get the wounded down to the surgeons as quickly as possible, delaying only to apply first dressings, rubber tourniquets, and splints where these were indispensable. Stretchers seem to have been used but rarely for conveying the wounded. It had been recognised that the little first-aid package, quite sufficient for bullet wounds, was too small for the wounds that would occur on board, so a first-aid packet for the service afloat had been prepared and issued, containing four 5-inch squares of 5-ply gauze, sterilised, and in a sterile paper envelope with bandage and pins, a package very similar to that in use in the German navy. Thus the wounded reached the dressing stations, which had been prepared for them beforehand by washing the roof, walls, and floor with soap to begin with, and afterwards with 1 in 30 carbolic lotion. The dressings, instruments, and surgeons' overalls had been sterilised in the steam sterilisers, and the patients were brought down by the stretcher-bearers, some of whom cut or removed the clothing of the wounded as required. The nature of their wounds was written down (probably by the accountant staff), and their position entered on the elaborate (one-eighth scale) diagram issued, which showed front, back, right, and left views of head and trunk, front and back views of (right and left) arm and leg, hand and foot. The surgeons did nothing but treat the wounds, and took great care accordingly to keep their hands clean. Unless deeply lacerated, wounds were treated aseptically. A pad of dry sterile gauze covered them while the neighbouring skin was being cleansed with spirit of soap or 1 in 30 carbolic. Arteries were only ligatured if this was urgently necessary; an indiarubber tourniquet or pressure might well suffice. Only foreign bodies that could be seen were now removed, the wound was bandaged, necessary splints applied, and the patient removed to an appropriate place where he was kept under observation in case further treatment should suddenly become necessary. Even these procedures ceased when the ship was actually engaged, as then there was too much dust in the air to make it wise to do more than apply first-aid dressings. After the battle the wounded were all again examined in turn, and now, if their wounds were quite superficial, these were sutured (they generally healed by first intention), exposed arteries were ligatured, splinters and fragments of clothing were removed (as many men as possible had had a bath the night before and probably all wore clean underclothing that day), and foreign bodies presenting under the skin were removed by counter openings. In the Chinese war of 1894 the treatment of wounds had been antiseptic, in 1904 asepsis was aimed at—a great advance. Every effort was made to keep wounds dry, and to treat them, unless probably infected, without washing. Iodoform gauze was used for wounds of the mouth, nose, &c., which could not be kept aseptic.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The *Journal of the Royal Army Medical Corps* for May opens with an article on Cell-inclusions in the Blood of a Case of Blackwater Fever, by Lieutenant-Colonel Sir William B. Leishman, which is followed by a paper on Pappataci Fever, by Lieutenant-Colonel C. H. Hale. Sterilisation and disinfection of water are subjects of great interest to the military surgeon, and the Chemical Sterilisation of Water for Military Purposes, by Captain V. B. Nesfield, I.M.S., and Observations on the Modern Coal-Tar Disinfectants as required for Service Purposes, by Major C. F. Wanhill, will be read with attention. Captain C. W. Bowle's note on a Regimental Self-cooking Equipment details some important improvements in a fireless or self-cooker adapted for army service. As the author points out, it is to be feared that we are somewhat behind continental armies in the use and development of self-cookers and field-cooking apparatus generally. The practical hints on marching and health on active service are continued, the instalments for this month dealing with Thirst on the March, and Music as an Aid to Marching.

ERRATUM.—We are asked by the Medical Department of the Admiralty to make the following correction in the list of awards at Haslar which was sent to us and published in

THE LANCET of April 27th, p. 1151. Surgeon Cecil H. Symons gained the silver medal, but not the Admiralty prize as stated; while Surgeon Alfred B. Clark gained the Admiralty prize for the hygienic group of subjects studied at Haslar. The error in the notice, we are informed, was due to a clerical omission, and is much regretted.

Correspondence.

"Audi alteram partem."

ANGINA ABDOMINIS.

To the Editor of THE LANCET.

SIR,—In an article appearing in THE LANCET of April 6th Sir Lauder Brunton and Mr. W. E. Williams draw attention to a syndrome of symptoms classed by the former authority under the name of angina abdominis. This syndrome has come under my own notice on more than one occasion. It is illustrated in the case recited below.

Some months ago a man came to me with symptoms as follows. Pain came on in the epigastric region when he walked, and particularly when he walked soon after eating. It grew unbearable when he continued to walk, but subsided when he rested. After walking was resumed and when 80 to 100 further paces had been taken pain again returned. The pain was described to me as beginning in the middle line just below the ensiform appendage and as radiating to the right and left from this point. As far as I could ascertain it never rose above the level of the sixth rib. It was burning and crushing in character, and was generally accompanied by flatus and a sensation of nausea. I prescribed nitroglycerine, and when he came again he told me that the tablets had always given him instant relief.

A few weeks afterwards I was asked to see him at his own house. That morning he had been awakened from sleep with pain felt in the region of the sternal synchondrosis extending over the anterior aspect of the chest wall from side to side and down both arms. The attack was accompanied by "thumping" of the heart, and lasted about five minutes. I observed a patch of algesia in the sixth left intercostal space, but none elsewhere.

The next day I passed an œsophageal tube and washed out the stomach with a solution of bicarbonate of soda (half an ounce to the pint). A meat diet with green vegetables was recommended and abstention from sugars and starches. Since then the patient has had no bad symptoms, and now feels pain only occasionally on walking.

I suggest that the symptoms during the early attacks resulted from tetany of gastric muscle—that is to say, from gastrismus—and during the later and more severe seizures from gastro-œsophagismus, and that the beneficial effects derived from the administration of nitroglycerine were occasioned by the action of this drug upon gastro-œsophageal muscle. The systolic blood pressure was 140 mm. Hg, cardiac sounds normal, radial and jugular tracings normal, no albumin. I am, Sir, yours faithfully,

H. WALTER VERDON, F.R.C.S. Eng.

Streatham-hill, S.W., May 10th, 1912.

POOR-LAW GUARDIANS AND PUBLIC APPOINTMENTS.

To the Editor of THE LANCET.

SIR,—Ever since domiciliary visits by the public vaccinator were instituted by the Act of 1898 there has been a considerable amount of discontent amongst the medical practitioners of this country. They have felt it an injustice that an official who is usually in general practice in the district and not a whole-time officer should in this way obtain an introduction to their private patients. Medical practitioners have naturally felt that such an arrangement is unsatisfactory to themselves, and further, that it is certain that were the parents of infants allowed free choice of doctor the percentage of infants vaccinated would be increased, inasmuch as parents prefer to have their children vaccinated by the family doctor.

The executive of the Broughton Medical Union, a union which represents all the practitioners in the district, having heard recently that the appointment of public vaccinator for the district had become vacant through the resignation of the incumbent, wrote to the Salford board of guardians asking them if this were the case, and if so to receive a deputation from the Broughton Medical Union before they proceeded to advertise the appointment. A reply was received stating that the board of guardians did not propose to advertise the appointment.

Feeling that it was contrary to the public interest that a valuable appointment should be made without any advertisement, and doubting the legality of such a procedure, a communication was sent to the Local Government Board. A reply was received stating that advertisement was not necessary. A letter of protest against their proposed action was sent to the Salford board of guardians. The guardians, however, proceeded to appoint a public vaccinator for the Broughton district.

Whilst it must be admitted that their action was strictly within their legal rights, the executive of the Broughton Medical Union have been instructed to protest against it in the press.

The union, while severely criticising the method adopted by the guardians in making the appointment, do not, however, wish to cast any reflection upon the gentleman appointed.—I am, Sir, yours faithfully,

R. B. FLETCHER, M.D. Vict.,
Hon. Secretary, Broughton Medical Union.

Manchester, May 13th, 1912.

THE BED ISOLATION OF CASES OF INFECTIOUS DISEASE.

To the Editor of THE LANCET.

SIR,—I had not intended to trespass on your columns again, but as Dr. Biernacki credits me with the suggestion that the results obtained by the barrier and cellular systems differ merely in quantity and not in kind, I wish to point out that I had no intention of making such a suggestion; and it seems rather curious that he should have interpreted my meaning in such a way. Dr. Biernacki must surely be aware that in his letters, interesting as they are, he has not given data to conclusively prove the statement to which I originally called attention. I am, Sir, yours faithfully,

FREDERIC THOMSON.

North Eastern Hospital, Tottenham, N., May 13th, 1912.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—There appears to be much greater difficulty in arriving at what "adequate remuneration" under the Insurance Act really means than your correspondents and the profession generally quite realise. May I therefore point out three methods of calculation, together with their special fallacies, always remembering that each method is overshadowed by one great source of error—our lack of knowledge of what the Commissioners will require and the insured expect?

1. Dr. Hall's method, which, put briefly, consists in selecting a number of names from his books and averaging out the accompanying receipts. But does Dr. Hall really know who are his patients? Conditions vary immensely in different districts and practices, not only as regards pay (and here we have another difficulty applicable to all three methods of reckoning), but also as regards personal relations. Personally I very often do not know who my patients are; for instance, I have heard another practitioner allude to so-and-so and his family as staunch patients, and I have heard this with surprise, for I had always been under the impression that they were mine and had no suspicion that they wandered from doctor to doctor. Perhaps in such a case I may have only received half-a-crown per annum from the family, but several others may have received equal or greater amounts. Again, many do not consult a doctor for ten years together. It hardly needs to be further pointed out that the method requires to be applied to a really large number of patients over a long period and in different districts and practices in order to obtain reliable results.

2. The method used by Dr. Brend in one of his recent articles in your columns, by taking the population of a given

area, multiplying it by a sum judged suitable, and then finding in what way the result is comparable with present receipts from private medical work in that area. Of course, this only shows whether the sum selected *per capita* is above, equal to, or below the present average payment *per capita* in the given area, and in using it we are also met by the special difficulty of not knowing the present exact receipts.

3. The plan which I favour is based on principles somewhat similar to the last, but has the advantage of taking (somewhat roughly) into account the probable requirements of the Commissioners and of the insured.

I think I am right in saying that, since the Act was designed to improve medical attendance on the working classes, the Commissioners are likely to require more work than is done at present; and when contract practice is undertaken it is but likely that more work will be required by the insured than when payment by attendance exists. We may assume, then, that the rate of pay should be roughly such as obtains in an average middle-class residential district where prescribing and not dispensing is the usual practice and where the inhabitants are not deterred from calling in the doctor by financial reasons. Now I think that, if anything, I err in giving too few medical men to work such districts if I allow 1 to 1500 of the population. On the other hand, the absence of children and of many women from the insured ranks (at least, until the "additional benefits" come into play) and the use made of hospitals by the insured just about neutralise this false estimate. Now to obtain an income of £500 per annum (gross) from 1500 patients the average capitation fee will be a trifle over 6*s.* 6*d.* This illustration gives the principle of reckoning; any practitioner can apply it to special cases or vary the conditions.

Finally, I would remark that, in order to level up town and country, mileage must be reckoned with; and in order to prevent or pay for unnecessary worry and trouble special fees should be charged for special calls and night calls—and possibly other special fees would need to be considered, though much depends on the forthcoming regulations of the Commissioners. But at best these methods all partake much of the nature of a guess, so that organisation and cohesion are necessary and will remain so long after the Act has come into operation.

I am, Sir, yours faithfully,

Keighley, May 10th, 1912. FRANCIS VILLY.

CONGRESS OF THE GERMAN SURGICAL ASSOCIATION.

(FROM OUR BERLIN CORRESPONDENT.)

THE Congress of the German Surgical Association was opened in Berlin on April 10th, Professor GARRÉ (Bonn) presiding. The proceedings began with an address delivered by the PRESIDENT eulogising the late Lord Lister.

Camphorated Oil in the Treatment of Operation Wounds.

Dr. LAMPE (Bromberg) described his method of treating operation wounds with camphorated oil. He said that previous to an operation the skin of the region involved was first rubbed with ether and then with camphorated oil of 2 per cent. strength. Camphorated oil was also poured into the wound at the beginning of the operation and once more previously to the application of sutures. Under this treatment wounds usually healed without complications. No case of post-operative ileus had been observed after laparotomy, although the serosa of the intestines came often in contact with the oily skin. In Dr. Lampe's opinion camphorated oil acted like balsam of Peru; its bactericidal action was rather feeble, but it enveloped the bacteria mechanically and produced local hyperæmia, with the result that the bactericidal action of the tissue was increased.

Diminished Virulence of Bacteria in Aseptic Operations.

Dr. DREYER (Breslau) said that he had examined the germs discovered in certain wounds after an operation under aseptic conditions. He found that of 40 wounds 26 were completely sterile; in the remainder staphylococci and atmospheric germs were present, but the staphylococci were not virulent, as was proved by agglutination, hæmolysis, and inoculation. It was therefore possible to destroy the virulence of pathogenic germs by aseptic methods.

Air Embolism.

Dr. KLEINSCHMIDT (Leipsic) said that he had made experiments on the production of embolism by the entrance of air into the veins and had found that death was caused by interference with the action of the right ventricle and the pulmonary circulation. He recommended puncture of the right ventricle for the purpose of removing the air by aspiration. The best prophylaxis was to operate in the Trendelenburg position, in which the pressure in the veins of the neck was positive.

Various Plastic Operations.

Professor KÖNIG (Marburg) recommended the implantation of ivory as a substitute for bone which had been lost. He said that he had succeeded in replacing a great portion of the jaw and the humerus respectively by pieces of ivory to which the form of the removed bone had been given. He mentioned a case operated upon a year ago in which the ivory remained in position within the tissues without causing a fistula.

Dr. LÄWEN (Leipsic) reported two cases of injury of the heart in which he had grafted on to the brittle muscular substance of the heart a flap taken from one of the pectoral muscles. The same proceeding had also been used in injuries of the liver.

Professor KOCHER (Bern) said that he had produced hæmostasis by grafting flaps of muscle in cases of severe hæmorrhage from the upper part of the skull. He was of opinion that the styptic action of the muscle was due to a fermentative process.

Professor LEXER (Jena), in discussing the grafting of tendons, said that the grafted piece of a tendon must not come into contact with the suture; the incision must therefore be made at some distance from the place where the tendon was to be implanted, and early movement of the part must be prescribed in order to avoid adhesion of the implanted tendon to the surrounding tissue.

Radium in Surgery.

Professor STICKER (Berlin) said that he had seen malignant growths of the skin, warts, and lupus disappear under radium treatment. Good results were also obtained in multiple lipoma and in cancer of the mucosa; sometimes also in cancer of the gastro-intestinal canal.

Dr. WERNER (Heidelberg) gave a description of the combined treatment by operation and radium-rays, used in the Cancer Institute under Professor Czerny. Mesothorium was now often administered instead of radium, and intravenous injection was sometimes performed. He showed a remarkable case of extensive relapsing cancerous disease of the stomach which was made accessible by a laparotomy and placed outside the abdomen. By exposure to radium the cancer was made to disappear completely, and the patient was now in good health 20 months after the treatment.

Serum Treatment of Tetanus.

Dr. VON GRAFF (Vienna) said that he had made experiments on the intravenous injection of anti-tetanus serum. By a prophylactic injection not only might the occurrence of tetanus be hindered, but success might even be obtained when the virus had reached the central nervous system.

Dr. EVLER (Treptow) described the prodromal symptoms of tetanus consisting of troubles of micturition, giddiness, abundant sweating, debility, and isolated muscular spasms. By serum treatment in that period an attack of generalised tetanus might be avoided.

Operations on the Brain.

Professor TILMANN (Cologne), in discussing the question of cerebral pressure, said that it was not always equal but might differ in the same individual according to the position, whether vertical or horizontal. In epileptic fits a pressure of 50 millimetres of mercury had been observed. The fact that large growths sometimes produced less pressure than smaller ones depended on the site of the growth, which fact was also of importance for the development of a choked disc.

Dr. HENSCHEN (Zürich) read a paper on the Diagnosis and Operative Treatment of Traumatic Subdural Hæmatoma. He had collected histories of 246 cases, of which 166 had been operated upon. The cause was in the majority of cases an injury of the veins of the pia mater. Of the 166 cases operated on, 113, or 68 per cent., were saved. Trephining and removal of the hæmatoma proved to be sufficient, but draining of the subdural cavity was necessary to prevent the

blood from accumulating again. The differential diagnosis between intradural and extradural hæmatoma, tumour in the brain, pseudo-bulbar paralysis, &c., could only be made by an exploration with the trephine.

Professor REHN (Jena) said that it was very difficult to replace the dura mater because the grafted flap was liable to become adherent to the cerebral cortex. This was especially the case in traumatic epilepsy where the cortex itself was cicatrised. To avoid these adhesions Professor Rehn recommended using subcutaneous fat for transplantations.

Professor KRAUSE (Berlin) reported some cases in which he had made the ventricles of the brain accessible. The first patient was a girl aged 7 years whose birth in the breech position had been very difficult, and convulsions of the left side and hemiplegia had ensued. The right lateral ventricle proved to have degenerated into a large cyst, which was evacuated by a free incision. The large cavity resulting was covered by three flaps of the dura mater and bone obtained by a plastic operation. The wound healed by primary union and the convulsions ceased. The girl's mental development made fair progress and the paresis of the left extremity diminished. A similar operation with nearly the same result was performed on a girl aged 10 years. The third patient was a girl, aged 12 years, who suffered from cerebral pressure and ataxy two years ago. When Professor Krause tried to make the cerebellar hemispheres accessible the operation had to be interrupted because the respiration ceased for 40 minutes, whilst the heart continued to beat during that time. The operation was then finished some time later and a large cyst of the right cerebellar hemisphere was found. An incision was made into the cyst, which was drained by taking a flap from the neighbouring dura mater. The patient made a good recovery. In the fourth case the operculum of the fourth ventricle was removed for the purpose of operation upon a growth of the vermis. To close the ventricle both cerebellar hemispheres were brought together, and the remaining fissure was covered by a flap of the dura mater. The grave symptoms had now almost completely disappeared.

Professor VON HABERER (Innsbruck) said that he had operated upon a case of extensive traumatic defect of the skull and right cerebral region of the brain which was causing spastic paresis and convulsions of the left side. Under the cicatrix there was a bulky mass which proved to be the enormously enlarged right ventricle. Professor von Haberer covered the ventricle with a piece of fascia taken from the thigh. The wound healed by first intention and the convulsions disappeared.

Dr. KIRSCHNER (Berlin) stated that hitherto the dura mater had been replaced by pieces of the fascia lata in 17 instances without fistula and without adhesions. Fascia was according to him preferable to fat for plastic operations on the dura mater.

Dr. VON BECK (Karlsruhe) reported a complicated case in which multiple operations became necessary because of otitis media and ensuing cerebral symptoms, and cystic degeneration of the arachnoidea proved to be present. In the result the patient recovered completely.

Dr. BLAXEL (Tübingen) said that he had operated upon a very rare case of bullet-wound of the internal carotid artery within the skull. There was a momentary unconsciousness, excessive increase of cerebral pressure, and paresis of the oculo-motor nerve, and the patient died during the operation.

Dr. SCHMIEDEN (Berlin) said that in his opinion complete abandonment of drainage in operations on the brain as recommended by Professor Krause was not possible in every case. Especially in operations on the cerebellum, in grave hæmorrhage, and in cysts, drainage should be employed. Drainage was harmless in itself when the technique was perfect.

Professor VON EISELSBERG (Vienna) recommended replacing the dura mater by pieces of fascia, a procedure which had given him excellent results, especially in epithelioma. He avoided drainage as much as possible.

Dr. HEILE (Wiesbaden) read a paper on

The Treatment of Sciatica by Epidural Injections.

For this purpose it was necessary to cause the irritated roots to swell out by the injection of a fluid. With this object in view he employed a solution of chloride of sodium, injecting various quantities which might amount to as much as 100 grammes, partly paravertebrally in the region of the irritated roots, and especially epidurally direct upon the roots themselves. He had never seen any ill-effect produced by the hundreds of injections which had been given. In all these cases the scoliosis disappeared together with the affection of the nerve.

(To be continued.)

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The City Council and Medical Affairs.

AT its meeting on May 1st the city council dealt with the question of the appointment of a woman doctor as assistant to the medical officer of health at a salary of £250 per annum, with board and lodging at Clayton Hospital. The matter came up on the minutes of the sanitary committee being read. An amendment was moved. The medical officer of health had practical charge of the sanitary department, and he was in command of a large staff of men, including 61 sanitary inspectors, and as his assistant would be in charge of this staff during his absence, the mover of the amendment contended that a woman ought not to be appointed. It was stated in support of the original motion that the medical officer had ratified the choice as a wise one. The amendment, however, was carried. Another matter discussed was the establishment of at least one school clinic to deal with the minor ailments of children, which were largely untreated in the course of the children's school life. It was contended that by the establishment of even one school clinic a good deal of money would be saved because of the increased grant due to a better and more regular attendance at school. A lady member opposed the proposal, not because she did not wish to have the children's ailments properly attended to, but because she thought that the cost of such health matters should be relegated to the sanitary committee, and not be made a charge on the education authority. Eventually the motion was negatived.

Consumption and Sanatoriums.

At a meeting of the Lancashire county council, held on May 2nd at Preston, Mr. R. Sephton called attention to the newly issued interim report of the Government Departmental Committee on Consumption as to the funds which would be available from the Exchequer for sanatoriums and other institutions for the treatment of consumption in the county. Of the total one million and a half, so far as this county was concerned, according to population, the amount available would be a little over £51,000. This was, however, only in aid, and he was afraid the council would be expected to spend a large sum out of the rates. The amount for upkeep of sanatoriums, reckoned on the basis of 1*s.* 3*d.* for each insured person, would be about £31,000 a year; the extra penny granted by the Government, he thought, was earmarked for research. There would be two units—a dispensary and a sanitary hospital—under the scheme. It was estimated that in the administrative county there would be required nine or ten dispensaries. Mr. Sephton expressed his opinion that whatever they did they could not avoid being saddled with a great deal of expense. Mr. C. J. Trimble thought that, having regard to the action taken by the medical profession in 1884 for the general uplifting of the nation, whereby the ravages of consumption in this country had been greatly stayed, in carrying out the new Act the authorities administering it would not make the mistake of putting up enormously expensive buildings.

Manchester Hospital for Consumption.

At the annual meeting of the Manchester Hospital for Consumption, held on May 6th, it was stated that ten more beds had been added to the Crossley Sanatorium. At the out-patient department 37,866 patients had attended, the largest number since the building was opened. The total income during 1911 was £13,011, and the expenditure £14,410, the deficit on the year's working being £1398, which, with previous adverse balances, made a total deficit of £4014. The report on the in-patients' department, with 150 beds which had been fully occupied, stated that the treatment had been highly successful. It was too early to forecast how the insurance Act would affect the institution. Most of the patients came from classes coming under this law. The recommendations laid down by the Government Commissioners in their interim report on tuberculosis

coincided with what had been done for years in Manchester by the Manchester Hospital for Consumption.

The Deadly Hat-pin.

An inquest was held on May 6th at Stockport on a young woman who died from blood poisoning caused by a hat-pin penetrating her nose. On April 20th, while talking to a friend, the latter's baby fell between the two. Both women stooped at the same time to pick up the baby, and a hatpin in the mother's hat penetrated the nose of the victim. Blood poisoning set in, which resulted in her death. At the time of the accident she said: "Do you know I scratched my nose on your hat-pin?" The pin was 12 inches long and projected 2 inches beyond the hat. The coroner, Mr. A. E. Ferns, said that death was due primarily to the "deadly hat-pin." There were not many cases in which the hat-pin was directly traceable as the cause of death, but there undoubtedly must be a very large number of cases in which the hat-pin caused injury—in some cases loss of sight or other damage. In Hamburg ladies were compelled by statute to put protectors on the point of the pin, and in America proceedings had been taken in cases where injury had occurred through the hat-pin. In England, however, up to the present, nothing had been done. The present case was an object lesson, and showed that something should be done in Great Britain. The jury expressed the opinion that long hat-pins ought to be forbidden or protected at the point.

Smoke Abatement.

In the Lord Mayor's parlour on May 7th a large number of citizens, representing various branches of industry, art, and science, waited on the Lord Mayor and asked him to use his influence in support of a proposal to appoint a committee to advise the Sanitary Committee in its efforts to abate the smoke nuisance. In the memorial presented by the deputation it was stated that the committee which it was proposed to form would be advisory and would not commit the corporation in any way. Its first business would be to investigate such subjects as the financial and other losses to the city due to smoke, its effect on public health and educational efficiency, and in driving the better classes out of the town. This investigation would demonstrate the financial, moral, and æsthetic benefits that would result from smoke abatement, and justify the committee in investigating all possible means of smokeless heating and their applicability. Such investigation would entail visits to foreign cities, notably New York, which is absolutely smokeless, to study their methods; also work on open fires, coke, smokeless fuel and gas, central heating and ventilation. After full investigation the department should instruct the citizens in smokeless methods through lectures, canvassing, exhibitions, visits, and advice, and should coöperate with surrounding towns and with the Local Government Board. The Lord Mayor said they must not expect any commitment from the corporation just at present. The smoke abatement question was one that concerned, first, the smoke that was the result of industries, and secondly, that from domestic chimneys. He advocated the extended use of gas in place of coal for cooking, power, and heating.

May 13th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The University of Liverpool and Wireless Telegraphy.

AT a time when the advantage of wireless telegraphy is so prominently in the public eye, it is interesting to know that the University of Liverpool is applying special attention to the subject. Owing to the generosity of Sir William Hartley, whose benefactions are so varied, the authorities of the University have now completed an installation at the Laboratories of Applied Electricity in Brownlow-street, and have begun what it is hoped may prove to be a successful career of experimental and research work of an advanced nature. The wireless installation at the University is intended to give students a practical knowledge of the methods employed in transmitting wireless signals, and it has been designed mainly for this end. They have now one of the most completely equipped laboratories or this purpose in the kingdom. For transmitting purposes a short aerial has been erected on the roof of the Electrical Engineering Laboratory about 100 feet above ground. This aerial is connected with a transmitting arrangement. The Post Office regulations limit the amount of power that can be sent out of a station, and it is not expected that the working range for transmission will be more than 50 or 60 miles, except under very favourable conditions. In connexion with this aerial a standard Marconi receiver has been arranged, such as is used on board ship; and this combination forms a standard small-power station. The most important part of the installation consists of a large aerial conductor, which stands 150 feet above ground. At present the aerial consists of two wires spanning from 500 feet, but arrangements have been made by which this can be altered to any other shape, such as the "umbrella" type, that may be required. In connexion with this aerial, tuning coils with a wide range are connected, so as to enable the aerial to pick up signals of any kind. Arrangements have also been made by which different kinds of detectors may be easily tried, and already some useful results have been obtained as to the most suitable crystal to use in the "crystal detector." A wave meter has been fitted so that the receiving circuit may be tuned by the aid of it to any wave-length required. At present signals have been received from ships in the river and from various land stations. The operations at the University are all of a strictly private character. No public use is made of any messages despatched or received.

The Annual Meeting of the British Medical Association in Liverpool and St. George's Hall.

So that the members of the British Medical Association may see St. George's Hall at its best when they come to Liverpool in July for their annual conference, the finance committee of the city council has decided that the wooden flooring of the large hall shall be taken up and the beautiful tiled floor exposed to view. The tiles will remain open for inspection for several days, and doubtless many other visitors besides the medical men will avail themselves of the opportunity of examining one of the most interesting decorative features of this magnificent building. It is only about once in every decade that the handsome tiled floor is uncovered. The first time the tiles were open to public view was on the occasion of the Public Health Congress nine years ago.

May 13th.

WALES.

(FROM OUR OWN CORRESPONDENT.)

The Welsh National Memorial and Sanatorium Benefits.

IN the interim report of the Departmental Committee on Tuberculosis it is pointed out that the position of Wales as regards the treatment of tuberculosis under the provisions of the Insurance Act differs from that of the rest of the United Kingdom. For example, the Welsh Insurance Commissioners are empowered to distribute any sum available for the purpose of the provision of, or the making of grants in aid to sanatoriums and other institutions, a function which in England is to be performed by the Local Government Board. Furthermore, the existence of the Welsh National Memorial Association, an institution with funds exceeding £200,000, which will shortly, no doubt, be incorporated by Royal Charter, differentiates Wales from England. The Welsh Commissioners may, if they think fit, hand over to the National Association the task of providing sanatorium benefits under the Act. In the event of this course being adopted, the public health authorities—some of whom, such as the corporations of Cardiff and Newport, are already doing excellent work in connexion with the prevention and cure of tuberculosis, among both the class who will come under the provisions of the National Insurance Act and those who will be non-insured—will be displaced by an entirely new authority, the National Memorial Association. The scheme of the association includes the provision of sanatoriums to accommodate 400 patients. The income of the association is about £8000 per annum, of which sum nearly one-half is already earmarked for educational and administrative purposes. The remainder would be about sufficient to pay for the maintenance in a sanatorium of, say, 70 patients. The cost of maintaining the remaining 330 patients, of providing dispensaries, hospitals, physicians, health visitors, and other matters, would have to be defrayed from the 1*s.* 3*d.* per

insured person payable out of the Insurance Fund. Any cost entailed in dealing with uninsured persons would have to come largely out of the local rates, and it is conceivable that the amount thus provided would be much larger than that provided by the National Association and the Insurance Fund together. The association has already done such admirable work that it would be a pity if its efforts were in any way crippled or its enthusiasm stifled. On the other hand, some public health authorities have done, and others are willing to do, most useful work, so that it may well be asked whether they should not continue their work apart from the association, more especially as they provide the money to carry on the work even if it were transferred to the administration of the association. The whole question is one which requires to be considered most carefully in all its bearings, and no step should be taken that is at all likely to alienate the sympathies of the public health authorities, who, in the words of the Departmental Committee, "must occupy an important position in any general scheme dealing with tuberculosis."

May 14th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Post-Graduate Course at Glasgow Lock Hospital.

IT is proposed to conduct a post-graduate course of demonstrations on venereal disease in the Glasgow Lock Hospital. The series will deal with the bacteriology and diagnosis and treatment of gonorrhœa, and the diagnosis and treatment of syphilis, including the administration of salvarsan. The fee for the course will be one guinea.

Proposed Extension of Kingseat Asylum, Aberdeen.

The Commissioners in Lunacy have reported that the extension of Kingseat Asylum is very desirable, certain sections, especially the closed villa section, being overtaxed. The parish council and Lunacy Board have been giving the matter their attention, and it is understood the extensions necessary may cost from £10,000 to £12,000. Alternative schemes are an extension of the hospital and an additional closed villa—the extra accommodation available at the Royal Asylum to be used for the overflow from Kingseat—and the erecting of inexpensive but serviceable annexes of a less permanent character than the other buildings. It is claimed for this last scheme that changes are so frequently made that the existing buildings of the asylum will be out of date before they are fully paid up. Some also feel that there might advantageously be more boarding-out of patients. At present from 80 to 90 per cent. of Aberdeen patients are boarded out, but these are mostly "fatuous patients," who originally were in the east and west poorhouses.

Consumption in Aberdeenshire.

In his report Dr. J. P. Watt, the county medical officer of Aberdeenshire, states that of the total 1479 deaths during the year 101 were due to pulmonary phthisis and 30 to other forms of tuberculous disease. The number of notifications received was 792. In 1910 the figures were 84 deaths from pulmonary phthisis and 44 from other forms of tuberculous disease, with 639 notifications. For phthisis the fall in the last quinquennium as compared with the first was 21·1 per cent., and for other tuberculous diseases 22·6 per cent. The increased fall in the last quinquennium corresponded with increased administrative activity, but whether the two had any causal relationship was difficult to say. Assuming the same rate of fall to continue, pulmonary phthisis would become extinct in the county in about 75 years and other forms of tuberculous disease in about 68 years. Of the 101 deaths from phthisis, 46 were in males and 55 in females. The average age was, for males, 35 years 10 months, for females, 31 years, while the average duration of the illness, where stated, was 2 years 1 month and 1 year 10 months respectively, an average for both of 1 year 11·7 months. With regard to scarlet fever, the report states that the treatment by rubbing the body of the patient with eucalyptus oil had been tried at Summerfield Hospital, and Dr. D. Rorie reported that while he was of opinion that this treatment did not meet the requirements of the present-day isolation hospital he could bear testimony to its benefit in private practice, in so far as it prevented the spread of the disease in the household and lessened the time of isolation required. Beyond this he was not prepared to go, as he had not found it prevent secondary complications, the possibility of which always depended on the health of the child at the time of the attack. When enlarged tonsils, adenoids, carious teeth, &c., existed it was hardly possible to say that mere swabbing of the tonsils would eliminate the chance of troublesome and dangerous local complications.

Proposed Small-pox Hospital.

At a meeting of the public health committee of the Aberdeen County Council, held on May 10th, the question of providing accommodation for small-pox cases in the various districts came up on the advice of the Local Government Board. Dr. Watt, medical officer of health for the county, said that granting the need of accommodation for small-pox cases, the county also needed accommodation for advanced cases of phthisis. Under the Insurance Act sanatoriums were to be provided, but it was necessary that provision should also be made for advanced cases. He suggested the combination of such a hospital with one for the treatment of small-pox. There had been only three outbreaks during the last 20 years, but undoubtedly there were many more children now who were not vaccinated. He did not think that advanced cases of phthisis could be dealt with under the Insurance Act. It was agreed that Dr. Watt should prepare a leaflet on the prevention of consumption, and should ventilate the question of the provision of a small-pox hospital at the various district committee meetings.

Clackmannan County Combination Fever Hospital.

A short time ago Sheriff Fleming and Dr. F. Dittmar were appointed commissioners by the Local Government Board to hold a private inquiry into a series of charges of maladministration in the conduct and management of Clackmannan County Combination Fever Hospital. The commissioners have now completed their task, and at a meeting last week of the hospital committee the report, which is a lengthy document, was submitted. The commissioners find that the charges were in the main unfounded, and they completely exonerate the committee, the matron, the medical officer, and the sisters from the allegations made. The meeting expressed unqualified satisfaction with the commissioners' decision, and agreed to record an expression of the committee's high appreciation of the matron's zeal and devotion in the discharge of her onerous duties. It was also agreed to vote her an honorarium of £20 to assist in the payment of her legal expenses.

Increase of Consumption in Berwickshire.

Dr. A. A. McWhan, the medical officer for the county of Berwickshire, points out in a recent report that though Berwickshire is a rural county it shows an increase in tuberculous disease. In 1903 it was reported to the local authorities that while tuberculous disease was decreasing in the country generally the county of Berwickshire did not seem to make much advance in that direction. In 1901 the death-rate from phthisis was 0·700 per 1000 as compared with 1·208 per 1000 for the total landward districts of Scotland; while in 1910 the death-rate was 0·907 as compared with 0·877 for Scottish landward districts. In 1911 28 deaths were registered, giving a death-rate from phthisis of 1·21 per 1000. These figures, as the medical officer points out, show a prevalence of phthisis that is not creditable to such a rural and open part of the country.

May 13th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Irish Creameries and Dairies Produce Bill.

THE Irish Creameries and Dairies Produce Bill, introduced to the House of Lords last week, contains several clauses of importance from the public health point of view. The Department of Agriculture is empowered to establish registers of creameries, and admission to the register is open only to such creameries as satisfy certain conditions. These conditions call attention to such points as cleanliness, adequate water-supply, avoidance of contamination from drains and cesspools, and so forth. The Department is to have full powers as to inspection. Penalties are imposed on persons supplying or accepting unclean milk or milk contained in a dirty vessel for use in a creamery.

Irish Asylum Finance.

Mr. Richard Jones, J.P., chairman of the Richmond Asylum, had an interview at the House of Commons last week with Mr. Masterman, Financial Secretary to the Treasury, and laid before him the facts in connexion with the failure of the Irish Local Taxation Account to discharge its liability for the payment of grants in aid of the maintenance of lunatics in Irish asylums. It was pointed out that the Local Taxation Account at the present time owed local bodies the sum of £82,000 in respect of the maintenance of lunatics, and Mr. Jones urged the recoupment of this sum. The circumstances, he said, which led Parliament to make this grant in aid in 1874 existed now in a greatly aggravated measure. In 1869 Mr. Gladstone estimated that the cost of maintaining lunatics in Ireland would ultimately reach £200,000; the actual cost in 1910–11 was £580,133. In 1870 the proportion of lunatics per 100,000 of population was 189; in the year 1910 that figure had increased to 558 per 100,000 of population. The average annual increase in cost had been much greater owing to increase in numbers since the passing of the Irish Local Government Act in 1898 than in the period from 1870 to 1898. Previous to the voting of the grant in aid by Parliament, loans for lunatic asylum purposes were granted out of the Consolidated Fund free of interest. That privilege was withdrawn in 1877. When capital expenditure was comparatively trifling Government bore a share of the cost; now, when capital expenditure in Ireland cost nearly £100,000 a year, they found themselves deprived of the full grant in aid of maintenance which Parliament formerly granted. The asylum authorities in Ireland, in the absence of any declaration from Parliament that the obligation assumed in 1874 had ceased to exist, regarded the sum claimed by them as a debt of honour due to them by the Imperial Parliament. Mr. Masterman said that he would look into the matter and reply to the deputation at the earliest possible moment.

The Irish Poor-law Bill.

It was hardly to be expected that Sir John Lonsdale would succeed in carrying his Poor-law (Ireland) Bill through Parliament at present. At the second reading last week the House was counted out. The Bill was on the lines laid down by the report of the Viceregal Commission, a report which received commendation from all parties. The details of the Bill, however, were severely criticised by the Chief Secretary.

Anti-vaccination in Ireland.

The anti-vaccinationists have been engaged in an active campaign in Ireland for the past few months. They circularise boards of guardians, trying to persuade them not to use their powers compelling parents to have their children vaccinated, and they suggest to the public that there is some injustice to Ireland in the fact that the vaccination laws are more rigid in Ireland than in England. In a few places the guardians have been misled into neglecting their duties. In Waterford, on the other hand, where the guardians are anxious to perform their duty, they have received scant support from the magistrates.

Dinner at the Royal College of Physicians.

On Saturday evening last Sir Hawtrey Benson, President of the Royal College of Physicians, entertained a large company to dinner in the hall of the College, to meet His Excellency the Lord Lieutenant.

Bequests of the late Sir Francis Cruise.

The late Sir Francis Cruise left personal property amounting to £23,358. He bequeathed his statuette of Sir Dominic Corrigan to the Royal College of Physicians of Ireland, and he left considerable sums to charity. The bulk of his estate he divided among his children.

Failure to Obtain a Dispensary Medical Officer.

The Clifden guardians find themselves unable at present to obtain a medical officer for the Boffin district of their union. Inishboffin, which constituted the district, is an island off the west coast of Connemara, having no communication with the mainland except by open boat, and in bad weather this fails altogether. There is no private practice, for, except the priest and one family, the islanders are all too poor to pay fees. The salary offered by the guardians—£170 a year—is unusually high for a dispensary appointment, but so far no candidate has appeared to claim it.

May 14th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

French Medical Students in 1912.

THE statistics of the students in the different faculties and schools of superior instruction in France on Jan. 15th, 1912, have been published in the administrative bulletin of the Ministry of Public Instruction. The Faculties of Medicine have 8265 students, 7400 (including 742 foreigners) being men and 865 (including 508 foreigners) women. The Schools of Medicine receive 1522 male students, of whom 1481 are French, and 134 women, of whom 116 are French. In the number of entrances the various faculties stand in the following order: Paris, 4170; Lyons, 1601; Bordeaux, 791; Montpellier, 681; then, with smaller entries, Toulouse, Nancy, Lille, and Algiers. Among the schools, Marseilles heads the list with 240 entries; then come Rennes and Nantes, with 147 and 116 respectively. The other school entries vary in number between 30 and 50.

Medical Fees.

An interesting question as to the payment of medical fees has recently been decided by the Paris Tribunal. A young girl on a visit in the neighbourhood of Rheims to an uncle, a farmer, in September, 1908, was caught in an agricultural machine, so that her leg and her arm were smashed. The uncle took the child in haste to Rheims, to his own medical man, who at once removed the injured limbs. When the child's father arrived from Paris he found her in the doctor's clinic, which she did not leave until she was cured. When the surgeon's bill was rendered the father, thinking the charge out of proportion to his financial position, especially as he had had no choice in the matter of the doctor and no opportunity for agreeing on terms for the operation, declined to pay, asserting that the bill must be settled by the child's uncle, under whose care she was when the accident happened, and who had called on his own medical attendant to treat the case. The Tribunal now declares that the father must always be held responsible for the fees of a medical man for attendance on a minor child, and ordered him to pay the doctor's fees of 650 francs, as claimed.

Bone Grafting.

An interesting discussion on bone grafting took place at the Société de Chirurgie on May 1st in reference to a case related by a military surgeon, Dr. Picqué, that of a patient with osteomyelitis in which there was a loss of substance similar to that produced by the resection of a malignant tumour. It is the rule in such cases when operation is performed in a part where two bones are in juxtaposition, that direct transplantation should be performed from the neighbouring bone. This Dr. Picqué did in his case; but he asks whether it is really necessary to have recourse to grafts of living bone, seeing that it has been found possible to obtain bony repair by the use of fragments of dead bone, washed in serum and alcohol and sterilised, which merely play the part of directing the bony repair. It would seem that grafts of living bone can have no other action than this. The graft does not actually take; bone regeneration merely takes place around it. M. Delbet remarked that in a patient, 34 years of age, with a pseudarthrosis consequent on a fracture of the neck of the femur seven years previously, he had recently performed an intraosseous graft by the use of 9 centimetres of the fibula. He used a graft completely deprived of periosteum, which he inserted horizontally through the great trochanter, then through the neck of the femur, and without interfering with the pseudarthrosis. The graft had held very well and the patient was able to walk naturally again. He had even sustained subsequently a second fracture of the neck and this united spontaneously. M. Poncet believed that an ivory peg might satisfactorily have replaced the bone deprived of periosteum. He had obtained a very good result by this method in a case of fracture of the calcaneum. He thought that the presence of a foreign body kept up an irritation that favoured bone formation, and that it must be in this way that living bone grafts acted in the majority of cases. This procedure, he said, had the further advantage of not causing loss of substance in another bone, which must necessarily be the case when live grafts are used, and even if the periosteum were left in place it was incapable of

forming useful bone again. M. Moty said he had made use of living sheep's bone for a graft. The bone fragments, having been well borne for several years, were finally thrown out spontaneously, when they were found to be in the same condition as when they were introduced.

The Loutreuil Legacy.

M. Loutreuil some time ago made several bequests to scientific institutions, and a presidential decree recently published in the *Journal Officiel* authorises their acceptance. The Academy of Sciences will receive a sum of 3,500,000 francs, the University of Paris 2,500,000 francs, the Caisse des Recherches Scientifiques 1,000,000 francs, and the Institut Pasteur 100,000 francs.

May 13th.

SPAIN.

(FROM A CORRESPONDENT.)

Typhoid Fever in Madrid.

FOR several months past an epidemic of typhoid fever has been reported here, of which the origin was popularly ascribed to eating oysters. Wishing to ascertain the facts, I called at the Institute of Alphonso XIII., which is the municipal laboratory here. Dr. Mendoza, the chief officer, informed me that there was no truth in the report that the disease had been traced to oysters. Many samples of these have been examined, but no bacillus of Eberth has been found, nor has there been any detected in the water-supply of Madrid. Curiously enough, the recent cases have chiefly occurred among the upper classes of society, one fatal case being the wife of the Dutch Minister at a fashionable hotel. Popular imagination has exaggerated the importance of the local cases because of the severe epidemic last autumn at Gijon, in Asturias, where there were over 10,000 cases with a mortality of 18 to 20 per cent. Dr. Mendoza thought there were grounds for supposing that some cases in Madrid could be traced to Gijon, but, generally speaking, he was inclined to think that the disease had been imported independently from several parts of Spain. He mentioned that there was no special type of disease. Not satisfied with this explanation, I sought an interview with a well-known Government inspector of the Sanitary Department of the Interior of Spain. This gentleman was candour itself. He proceeded to tilt at sanitary matters in this country. Sanitation in Spain, with the exception of the ports, was badly carried out. Vested interests stood glaringly in the way of public interests. He quoted from his diary to prove that reports made by inspectors are shamefully ignored, and orders given by the central authorities are not conformed with. Political wire-pullers are at work everywhere in the life of the country, and sanitary like other reformers are checked at every turn. Regarding the present state of typhoid fever in Madrid, it is endemic here. There are about three cases of the disease a day in the year normally, and there are about the same number now. He agreed that they had found no typhoid germs in the oysters examined, nor yet in the water-supply. Of the latter he gave an unfavourable account. The source is from the Sierra de Guadarráma to the north-west, and the water is conveyed in an open water-course for the most part, and is, therefore, liable to pollution. It is stored in two reservoirs and it is unfiltered. The varying colour of the water gives evidence of this. The soil of Madrid is alluvial, and in consequence of shifting of the soil there are breakages in the water-pipes and gaps. Pools are formed at these points. This authority did not doubt that it was because of the large number of cases among the upper classes, and the fact that a diplomatist's wife had died from the disease that so much had been made of the matter at the present time. He admitted that there were probably more cases than were reported, in spite of the rule of compulsory notification, which was not observed by medical men in mild cases. Reverting to the fact that typhoid fever was endemic in Madrid, the inspector spoke of various local foci, and quoted many instances of what appeared to be infection due to direct contact. It is satisfactory to learn that a new system of drainage is to be commenced very shortly for the whole city, and the most approved methods are to be adopted.

San Sebastian as a Health Resort.

While Biarritz has for some years been an acknowledged winter health resort, San Sebastian, its neighbour just across the Spanish frontier, has been content to be classed as a summer and autumn place alone. During the last two winters, however, efforts have been made locally to attract visitors to this beautiful spot, which in point of climate can be said to rival Nice. From the following table it will be seen that the mean season temperatures of autumn, winter, and spring of San Sebastian and Nice are practically equal:—

	Autumn.	Winter.	Spring.
San Sebastian ...	60·08	47·89	54·50
Nice	60·42	46·23	55·88

The mean annual mortality for the last five years is 19·4 per 1000. San Sebastian has the reputation of being the model town for sanitation in Spain. The municipal authorities conscientiously carry out their duties. A visit paid by the writer to the chemical laboratory of the town afforded interesting evidence of this. Here, Dr. Casadevente, the chief analyst, explained the various methods employed for ensuring the purity of the local food and drink-supply. Provisions coming into the town are tested at the laboratory. Some are checked at the octroi; some from samples taken in the markets by special inspectors, who also pay surprise visits to shops. The milk-supply is also constantly sampled and tested. The water-supply, which is tested daily, is exceptionally pure. The situation of San Sebastian is ideal. Lying in a crescent, it is protected at the back by a range of hills, and on either side rise up Monte Urgull and Monte Igueldo. The lovely bay of the Concha, almost a perfect circle, contains at its opening the island gem La Clara. The finest bathing, perhaps, in the world can be had from its sandy shore. The past winter at San Sebastian has been especially fine, and during the coldest days in England bright sunshine and mild temperature have been the rule at this Spanish resort. At all seasons the light is very brilliant, and cases of anæmia do remarkably well. Speaking generally from a therapeutic point of view, the climate is suitable for rickets, tuberculous bone disease, and glandular affections of all kinds. Kidney cases do well; albuminuria clears up rapidly, particularly in cardiac cases, which seem to benefit by residence there. The hotel accommodation is excellent, and there is a good English *pension*, and further hotels are springing up; but of special interest is the formation of an English company to take over the land on Monte Urgull and build a fine hotel near the summit and villas lower down. For recreation there are all the attractions of the Casino, and in the neighbourhood pigeon-shooting, golf, and fine roads for motoring.

Madrid, April.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

English Medical Visitors to Vienna.

A FEW days ago a party of English medical men, 30 in number, was received with great cordiality by their professional *confrères* in Vienna, who showed them over the hospitals and took them to see various other places and objects of interest. The visitors' principal object was the collection of information on medical questions, and they saw much that was very creditable to the Vienna school, as well as some things of which we cannot be proud. Amongst the latter conditions may be mentioned a visit to the clinic of Dr. Lorenz. Here they witnessed the bloodless reduction of a dislocated hip, and they were also enlightened as to the manner in which this eminent surgeon is being treated by the State. He has no more than two wards with eight beds at his disposal, although the patients who come to him would require 30 beds, and he has become so tired of making constant applications of one kind or another on behalf of his clinic that he has resolved to resign his post. In Dr. Eiselsberg's clinic the visitors were present at the removal of a cerebral tumour, an operation which they greatly admired. The new clinics, with their splendid equipment, fulfilling all modern requirements as regards teaching, examining, investigation, and comfort for the patients, were also duly inspected.

The Declining Birth-rate and Increasing Infant Mortality.

The results of an extensive research conducted by the Austrian Society for the Care of Infants and controlled by official statistical data were embodied in a paper read

before this society by Dr. Moll, who takes a prominent part in the organisation of the society. He pointed out two facts. The one is well known all over the world, and is the subject of much speculation on the part of students of eugenics and biology—namely, the constantly falling birth-rate in civilised countries. The other important fact demonstrated by Dr. Moll is a marked increase of infant mortality in the wealthier districts of Vienna, the statistical data of the first, fourth, sixth, thirteenth, and nineteenth districts of the city showing that the number of deaths of infants under one year of age has gone up more than 30 per cent. during the last five years. These districts being regarded as healthy sections of the city, mainly inhabited by well-to-do persons, the statements were startling, but nevertheless they were correct. The Vienna magistrates have therefore instructed the municipal board of health to send out a series of questions to all its medical officers in order if possible to ascertain the causes which are responsible for this shortening of infants' lives. The following questions were drawn up. 1. Which classes of the population and which groups of occupations are chiefly concerned in the large infantile mortality? 2. Are there any particular streets in which the infantile mortality is exceptionally high? 3. Has the occupation of women anything to do with the fall of the birth-rate and the rise of infantile mortality, and has the percentage of outdoor occupation of women during the child-bearing age increased? 4. Has the number of medical cases diminished or is medical aid less frequently asked for? 5. Can any connexion be traced between housing conditions and the increased mortality of infants? 6. What is known about the health conditions of infants boarded out? 7. Is suckling of infants by their mothers on the decrease? 8. How can the unfavourable conditions be combated? In the newspaper correspondence following the publication of the lecture by Dr. Moll and the measures adopted for investigation, it was pointed out on good authority that the quantity of food consumed by the bulk of the population was less than formerly, and that its quality had also suffered of late, owing to the general rise in price of all articles and general increased cost of living. Rents have also gone up in Vienna, with the natural result that overcrowding, subletting, and the deterioration of the atmosphere in inhabited buildings are now more marked than they were 5 years ago.

Sick Clubs in Austria.

The official report for the year 1911 dealing with the sick clubs of this country has recently appeared. The number of such institutions has increased by 22 per cent. during the period from 1890 to 1910; there are now 3349 different clubs. The membership, however, has increased by 115 per cent., the present number of the members being 3,344,288. The income from the year 1890 to 1910 was nearly 1000 million kronen (£40,000,000), the expenditure was 908 million kronen (about £36,000,000), 87 per cent. of the expenditure consisting of money paid for sickness insurance to the members. The number of cases of illness was 25,240,562, with over 436 million days of illness, and 455,051 members died. The average number of members of a club is 1006, of whom 77 per cent. are men and 23 per cent. are women. During the year 1909–10, when the above-mentioned figure of 3,344,288 members was reached, 1,370,273 members fell ill, or about 40 per cent., with 25,515,697 days of illness. Furthermore, 55,515 cases of child-birth were notified and the resulting expenses paid. There were 27,820 deaths, and under this heading the net expenditure for maintenance during illness, medical attendance, and death duties was 66 million kronen (£2,500,000).

A Remarkable Accident.

At a recent meeting of the Vienna Medical Society a remarkable case was shown, the patient being a man aged 28 years, who had shot himself with a revolver in the left side of his chest. When he was seen in the hospital five hours afterwards the bullet was found to have penetrated the heart, and there was a swelling of the right leg reaching up to the knee. An X ray examination showed the bullet lodged in the right femoral artery, over the head of the femur. The bullet was extracted and the wound in the artery was closed, but the leg had afterwards to be amputated through the knee on account of the occlusion of the tibial arteries by a thrombus extending from these arteries up to the popliteal space. The patient made a good recovery after having also had the wound in his heart attended to. It was stated at the meeting that there were altogether on record only 17 cases in which a bullet had been rapidly carried by the blood-stream into peripheral regions, and of these 13 were diagnosed during life; only three were operated upon, all three with good results, including the one now under consideration.

May 6th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

The Health of New York City.

FOR the twelfth successive week the death-rate of New York City is lower in 1912 than in the corresponding period in 1911, the "record" year. The rate for the week ending April 27th, 1912, was 15·42 against 16·55 for the week ending April 29th, 1911. This represents a difference of 1·13, equivalent to 112 deaths in favour of 1912. In only three of the 17 weeks of 1912 has the death-rate been higher than in the corresponding week of 1911. Comparing the entire period of 17 weeks the rate this year is 15·80 as against 17·13 in 1911, a decrease of 1·33.

The Sterilisation of Criminals in New York.

A Bill providing for the sterilisation of certain classes of male criminals and defectives confined in the New York State prisons has been passed by the State Legislature and signed by the Governor. It establishes a board termed the Board of Examiners of Feeble Minded, Criminals, and other Defectives, with jurisdiction in the matter. The board, which is to be composed of one surgeon, one neurologist, and one general medical practitioner, will examine men of the criminal and defective classes with a view to deciding as to the likelihood of their transmitting to their descendants criminal tendencies, insanity, or feeble-mindedness, and also whether their own mental condition would be improved by the operation. In the event of an affirmative decision it will appoint one of its members to perform the operation. Persons convicted of rape or of such a succession of offences as the board may consider to afford sufficient evidence of confirmed criminal tendencies will come within the scope of this law, which contains precautions to safeguard its operations. New York is the sixth State of the Union to adopt such a law.

A Tuberculosis "Preventorium."

An important institution was formally opened a few days ago at Farmingdale, a New Jersey village some 40 miles from New York, by a number of philanthropists of the metropolis. This is the Tuberculosis Preventorium for Children. It is established to prevent the development and spread of tuberculosis, primarily among children. The building is entirely of fireproof hollow tile and cement, erected upon a small plateau, some 90 feet high, on the outskirts of the pine-tree belt of New Jersey, where the fashionable winter resort of Lakewood is situated. The "preventorium" was first started at Lakewood, but local opposition caused its removal to Farmingdale, which is seven miles away. At present there is accommodation for some 150 children, not tuberculous, but the offspring of tuberculous parents. On the removal of a tuberculous parent to one of the tuberculosis sanatoriums the clinic that sends the parent there looks after the children also. They are removed to Farmingdale to remain until the parent has recovered. With the exception of two and a half hours devoted to school work each day, the children are practically in the open air all the time. The dormitories are without glass or window sashes, although during the past winter the temperature frequently descended to 8° below zero. Among the 388 children cared for during the past three years there has not been a single hour's illness from any cause. The "preventorium" is richly endowed. It is intended not only to extend the local institution but to found similar ones all over the country. It is not improbable that this idea will be carried out with other diseases, so that every patient presenting himself with an infectious disease will be followed up to his home, the sources of infection being removed or destroyed, and the proper hygienic and sanitary instructions given.

The Opium Traffic.

It is alleged that the New York band of opium smugglers is

backed by such powerful interests as to be able to defy the best efforts of the police and to flaunt their dealings in the face of the minor courts in cases where control of such courts has not been obtained. For every £200 worth of crude opium smuggled into the country, there is an easy profit of £1200 to be distributed, and the total profits are computed to reach the total of £600,000 annually. There are four points, all near the Canadian border, where the opium is supposed to make its entry into the United States—viz., Plattsburg, N.Y., a point in Northern Vermont, at Niagara Falls, and at a place on the Wisconsin border.—The Committee on Interstate and Foreign Commerce of the House of Congress is now considering the Richardson amendment to the Food and Drug Act of June 30th, 1906, which would make it obligatory upon every retail drug-shop in the country to register every sale, not only of morphine or other alkaloids of opium, but of every mixture containing one of them, no matter how minute in quantity. Even respectable druggists are up in arms against such an amendment, which would necessitate an impossible amount of registering and bookkeeping, and give employment to a veritable army of new Government inspectors.

The Mississippi Floods.

Fearing that the disastrous floods on the Mississippi may cause an epidemic of disease, the Federal Government has decided to interfere without invitation from State authorities—a most unusual, if not unprecedented, step. Malarial fever, dysentery, and pneumonia are reported, as well as many deaths from privation and exposure.

The late Surgeon of the "Titanic."

A requiem mass at St. Patrick's Roman Catholic Cathedral in New York, in memory of William Francis Norman O'Loughlin, the senior surgeon of the White Star Line, who went down with the *Titanic*, was largely attended.

A Physician as Aide-de-camp to the President.

The President has appointed Major Thomas L. Rhoades, of the United States Army Medical Corps, to succeed Captain Archibald Butt as his aide-de-camp. Captain Butt was another victim of the *Titanic* disaster.

The Etiology of Epilepsy.

Dr. H. M. Greene, of Portland, Oregon, has reported to the Fortnightly Medical Club some investigations on convulsions in epilepsy. Suspecting them to be caused by a toxin he obtained blood from an epileptic in whom convulsions developed one year after an attack of scarlet fever. With the aid of Professor E. F. Pernot, of the Portland Bacteriological Laboratory, he succeeded in isolating a large diplococcus together with a very small micrococcus. A second blood specimen from the same patient showed the same two organisms. Similar results followed investigation of the blood of another epileptic. Dr. Greene and Professor Pernot are now preparing a bacterial vaccine for use on the patients.

Investigation into Miners' Diseases.

The United States Public Health and Marine Hospital Service has made an arrangement with the United States Bureau of Mines by which surgeons of the Public Health Service will carry on investigations into the conditions of life in the mines. It is a matter of common knowledge that in mines in the United States and in other countries both hookworm disease and tuberculosis are prevalent. The fact is recognised that the mines of the United States are capable of great improvement from the sanitary standpoint, and that with the introduction of necessary reforms health conditions will be advanced and the risk of accidents much lessened. The scope of the forthcoming investigations will be wide.

May 4th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Registered Midwives.

AN Act for the Registration of Midwives has been operative in West Australia under the provisions of the Health Act for nine months, and a report dealing with the six months ending Dec. 31st, 1911, contains some interesting information. Registration was permitted under two sections—viz., those women holding certificates of training and others who could produce evidence of *bonâ-fide* practice as a midwife during two years prior to the passing of the Act and satisfied the Board of their competence, cleanliness, and repute. Under the first provision 105 were registered and under the second 528. From Jan. 1st, 1912, only the certificate of the Central Midwives Board, England, will be accepted, and others, except those holding certificates under statutory authority, will be compelled to undergo 12 months' training and then satisfy the Board of their fitness.

Boric Acid in Butter.

An experiment was conducted recently by the Food Export Department of Victoria on the following lines. Victorian butter factories were asked to submit four boxes from the one churning, to two of which boric acid in the permitted Commonwealth percentage (0·5) had been added, while the other two were free from preservative. One of each was shipped to England by the s.s. *Orama*, while duplicates were retained in the local cool stores. Cable messages have been received from London that the trade were strongly in favour of the retention of the preservative, and that the butter containing the boric acid had a market preference of 8*s.* per cwt. mainly on the score of flavour. Fifty factories complied with the conditions. The result of the experiment, officially announced, showed that the Commonwealth authorities exercised a wise discretion when they refrained from following the lead of the States in the proposal to abolish boric acid from butter. Their standard was 0·5 per cent. As far as lay in their power, they would always see that nothing was done which would cause loss to the export trade of those engaged in the dairying industry. Dr. Jamieson (city health officer and a member of the Pure Food Committee) said the result would be very far-reaching. It appeared to have been clearly established that the use of boric acid was of distinct advantage in the preservation of butter.

Health of Sydney.

The annual report for 1911 states that the population of Sydney was 631,600 at the end of 1910. The mean for the year was 641,700. The marriage-rate was 11·91 per 1000 of population, which is the highest on record. The birth-rate was 27·78 per 1000, also a record. The death-rate was 10·87 per 1000, which was slightly above that of the preceding year. The infantile mortality figure was 71·1 per 1000 births, which is the lowest ever recorded.

Melbourne Hospital.

Although three blocks of the new hospital are nearing completion, the ceremony of laying the foundation-stone only took place on March 23rd. The Governor of Victoria, Sir John Fuller, presided over a large gathering and performed the ceremony, remarking that in so doing they were adding a new page to the history of Melbourne. Although a sum of £120,000 was allotted for building by the trustees of the Wilson estate, the chairman of the hospital committee stated that a further £60,000 would be required for building and equipment, and intimated that a public appeal would be made. The Treasurer of Victoria (Hon. W. Watt) said that the Government would recognise its responsibility in providing a portion of any sum shown to be necessary.

Charge against a Medical Man.

The charge of murder against Dr. Samuel Peacock, details of which have been given previously, came to final trial after three separate hearings. The first jury convicted, but the conviction was upset on appeal, on points of law, and a new trial directed. The second jury disagreed, and the third returned a verdict of "Not guilty." The accused was discharged.

University of Sydney.

Sir Norman McLaurin has been re-elected Chancellor of the University of Sydney. Professor Anderson Stuart has been appointed representative at the 250th anniversary of the Royal Society of London.

Action for Damages.

In the Adelaide Lower Court Samuel Pearce proceeded against Mr. F. W. Waters, of Adelaide, for the recovery of £490 damages for alleged unskilful treatment of the plaintiff's shoulder, as a result of which the plaintiff had lost the use of his right arm and had been and was still unable to follow his occupation. The defendant pleaded "not guilty" and counter-claimed £12 6*s.* for medical attendance. The dispute turned on the alleged failure of the defendant to recognise that a dislocation of the shoulder was present with

consequent inappropriate and inadequate treatment. In summing up his honour Lord Acting Justice Buchanan said the real point at issue was whether there was dislocation on Sept. 3rd. On that question there was diametrically contradictory evidence. The burden of proof was on the plaintiff, who had to establish beyond reasonable doubt that there was dislocation at that time. On the whole his honour accepted the defendant's version of what took place. He thought the defendant's evidence had been very fairly given, and he could not accept the evidence of the plaintiff and his wife as to the examinations made by Dr. Waters. His honour said they must all have the utmost sympathy with the plaintiff, who had met with an accident which would probably affect him for the rest of his life. On Jan. 30th, five months after the accident and about four months from the time the plaintiff was last visited by the defendant, they had the first evidence of dislocation. There would be a verdict for defendant on the claim and the counter-claim, with costs.

April 6th.

THE NATIONAL INSURANCE ACT.

WE have received the following notice from the Joint Committee of the Insurance Commissioners: "At the opening meeting on Friday, the 10th instant, of the Advisory Committee appointed under the National Insurance Act the Chancellor of the Exchequer announced that a subcommittee had been appointed by the Commissioners, whose duty it would be to investigate and collect information as to the conditions of remuneration prevailing in general medical practice throughout the United Kingdom. The Commissioners desire it to be known generally that they will welcome information or representations from medical or other associations or persons who are prepared to submit statements of fact or to tender evidence on this question which may assist the sub-committee in their investigations. Concurrently with the consideration of the special question of remuneration by the above-mentioned subcommittee, the Commissioners will consider in conjunction with the Advisory Committee the Regulations required to be framed for the general administration of medical benefit under the Act; and they will be glad to receive information, from any persons who may be in a position to supply it, as to local conditions of practice which may be of service to the Commissioners in framing the Regulations. All communications should be addressed to the Secretary, Subcommittee on Medical Benefits, Wellington House, Buckingham Gate, S.W."

SCOTTISH MEDICAL INSURANCE COUNCIL.

A circular signed by the chairman, Dr. W. Russell, is being issued to the medical profession in Scotland containing a narrative minute of the first meeting of the Scottish Medical Insurance Council held on April 12th and 13th, and an appeal to every medical man in Scotland to be loyal to the Medical Committee of his insurance area, and to enter into no negotiations or arrangements with regard to contract practice of any kind without the approval of his local Medical Committee. The office of the Scottish Medical Insurance Council is at 54, George-square, Edinburgh. A local canvass of the profession in Scotland is being organised through the Local Medical Committees, and practitioners are urged to supply all the particulars asked for with regard to Friendly Society practice in their districts. It is estimated that in Scotland, out of a population of 4,759,000 persons, 1,490,000 are insurable under the Act—i.e., 31·3 per cent. It is also estimated that of the total male population about 46·4 per cent. are insurable, while of the males of 16 years of age and over it is estimated that 75 per cent. are insurable.

THE PROFESSION IN IRELAND AND THE INSURANCE ACT.

A meeting of delegates of the profession from all parts of Ireland will shortly be held in Dublin to discuss the present position of the profession towards the National Insurance Act. Meetings of the local profession are being held throughout the country to elect delegates. A largely attended meeting of the medical men of the county and city of Dublin was held last week in the Royal College of Physicians, under the presidency of Mr. Robert H. Woods, P.R.C.S. Irel., when the following were elected as delegates:—For the city of Dublin: Dr. H. Jellett, Mr. A. J. Horne, Dr. Hayes, Dr. R. J. Rowlette, Mr. J. P. Garland, Dr. H. T. Bewley, and Dr. J. C. McWalter. For the county Dublin: Dr. Bennett, Dr. Boyce, Dr. T. D. Good, Dr. R. L. Heard, Mr. D. Jackson, Dr. Ussher, and Dr. White. All branches of the profession in Dublin are represented.

EDINBURGH PROVISIONAL LOCAL MEDICAL COMMITTEE.

A meeting of the medical profession in Edinburgh was held on May 9th in Gartshore Hall. Invitations had been issued to all medical men in the Edinburgh insurance area, and 99 attended. Dr. James Ritchie having been elected to the chair, stated that the meeting had been called by the instructions of the British Medical Association and the Scottish Medical Insurance Council. It was intended to form a provisional, not a statutory, local committee, and the chairman indicated the necessity for its formation. Before proceeding to the election of a committee, the question was raised whether medical members of the Advisory Committee would be eligible for nomination as members. This was voted upon by the meeting, and was lost by 26 votes to 46. A list of suggested names had been prepared by the executives of the Edinburgh and Leith Medical Practitioners' Association and the Edinburgh and Leith division of the British Medical Association. These had been printed and distributed to those attending the meeting, and with two alterations the gentlemen proposed were elected by a very large majority.

SHOREDITCH MEDICO-ETHICAL SOCIETY.

A meeting of this society was held on May 9th at Balfour Hall, Kingsland-road, London. The President, Dr. MAJOR GREENWOOD, was in the chair, and with two or three exceptions every practitioner in the borough of Shoreditch was present. Dr. T. CHETWOOD and Dr. J. H. PORTER, the borough representatives on the Provisional Committee, briefly reported what had taken place at the first meeting of that committee, and pointed out that the chief matter under consideration was the placing of resignations of all Friendly Society medical appointments in the hands of the State Sickness Insurance Committee and the formation of a suitable guarantee fund, and that they had been appointed to canvass all practitioners in their area with that object. The chairman said that the former proposal presented great difficulties in districts like their own, and would require grave consideration. If the proposal were adopted by the great majority of the practitioners it would be practically safe, and no use would be made of the resignations unless an overwhelming number were obtained. He hoped that all would be prepared to make sacrifices for the common good. With regard to the guarantee fund, all could do something, and it was very desirable that a great effort should be made. It must be understood that the object of the fund was not to compensate all losses caused by the Act—that would be impossible—but only such as were brought about entirely by loyalty to the wishes of the profession, as decided by the central Committee.

MIDLAND VOLUNTARY HOSPITALS AND THE ACT.

A conference of representatives of Midland Voluntary Hospitals was held in the board room of the General Hospital, Birmingham, on May 8th. Mr. Neville Chamberlain was in the chair, and 59 representatives were present. The following resolutions were unanimously adopted:—

That in the opinion of this conference it is desirable that as soon as the benefits of the Insurance Act come into operation, and provided that arrangements are made with the medical profession for adequate medical attendance outside the hospitals:

(*a*) Insured persons applying for treatment in the out-patient departments of voluntary hospitals: (1) should receive "first aid" only when they meet with accidents or are in such acute medical or surgical conditions as require immediate help and are unable to obtain access to their own doctors, or in the case of a ticket hospital when they come to the hospital with an out-patient note; (2) should receive treatment only when the treatment be of such a special nature that it cannot be carried out elsewhere than at the hospital; (3) should obtain a second opinion only on the recommendation of a medical officer on the panel.

(*b*) In the case of insured persons admitted as in-patients a claim for subscriptions or donations should be made on behalf of the hospital to the Approved Society or the Local Insurance Committee, except where, in the case of a ticket hospital (should the management so decide) an in-patient ticket, such as may be required by the regulations of the hospital, has been produced.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly meetings of the above Colleges held on April 25th and May 9th respectively, the Licence of the Royal College of Physicians and the Diploma of Member of the Royal College of Surgeons were conferred on 96 gentlemen who have completed their examinations and have complied with the by-laws. The following are the names of the successful candidates:—

Edward Smith Abraham, Bristol University and University College Hospital; Rupert Blake Adams, St. Mary's and Middlesex Hospitals; Carlyle Aldis, Guy's Hospital; John Alban Andrews, Edinburgh University; David Greig Arthur, St. Bartholomew's Hospital; Thurstan Edmund Banister, B.A. Cantab, Cambridge University and St. Thomas's Hospital; Frederick Stanley Bedale, M.A. Cantab., Cambridge and Manchester Universities; Thomas Izod Bennett, Guy's Hospital; Alan Herrenden Birks, B.A. Cantab., Cambridge University and Guy's Hospital; Arthur Brodie Hamilton Bridges, Middlesex and London Hospitals; Douglas Stephen Bryan-Brown, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Ronald Edgar Russell Burn, St. Bartholomew's Hospital; Frederick William Campbell, St. Bartholomew's Hospital; Percy Norman Cave, M.D., B.Ch. Oxon., D.P.H. Lond., Oxford University and St. Mary's Hospital; Douglas George Cherrington, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Per Emil Christofferson, Bristol University; John Wing Hon Chun, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Albert James Clarke, St. Bartholomew's Hospital; John Joseph Clarke, London Hospital; Cyril James Weston Clayton, St. Mary's Hospital; Charles Frederick Constant, Guy's Hospital; Hugh John Couchman, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Wilfred Alan Curry, M.D., C.M. McGill, McGill University and University College Hospital; William Everard Sherard Digby, Guy's Hospital; Harold Archibald Douglas, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Robert Joel Gazalet Douty, Middlesex Hospital; George Eldridge Dyas, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; William Halley Eggar, Middlesex Hospital; James Victor Fiddian, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Claude Emery Freeman, Sheffield University; Charles Alexander Robertson Gatley, Guy's Hospital; William Stanley George, Guy's Hospital; Herbert Marshall Gilbertson, St. Bartholomew's Hospital; Philip Withers Green, St. Mary's Hospital; Gilbert Henry Colling St. George Griffiths, Bristol University; Arthur Sydney Hahn, Sheffield University; *John Walter Barron Hanington, McGill University and London Hospital; Leslie Price Harris, Guy's Hospital; Alfred Kimball Haywood, M.B. Tor., Toronto University and London Hospital; Edward Howard Heaton, London Hospital; Ronald Hodson, B.A. Cantab., Cambridge and Liverpool Universities and St. Bartholomew's Hospital; Joseph Francis Holmes, Bengal Medical College, Calcutta, and Charing Cross Hospital; Arvor Jones, Liverpool University; Ronald Sinclaire Kennedy, B.A. Cantab., Cambridge University and Guy's Hospital; William Stocks Lacey, L.D.S. Eng., Guy's Hospital; Sohan Lal, Punjab University and London Hospital; Edward Aleck LeMaistre, London Hospital; Adolph Richard Niell MacGillycuddy, University College Hospital; Robert William Meller, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Leonard Milton, Guy's Hospital; John Morris, Middlesex Hospital; Harold James Storrs Morton, B.A. Cantab., Cambridge University and London Hospital; Edward Jocelyn Nangle, B.A. Cantab., Cambridge University and St. Mary's Hospital; Victor Ewings Negus, King's College Hospital; George Nelson, Charing Cross Hospital; Frank Chafen Newman, M.A. Cantab., Cambridge University and Guy's Hospital; Cuthbert John Nicholson, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Richard Goodhart Oram, Guy's Hospital; Claud John Burgoyne Pasley, Westminster Hospital; Cresswell Lee Pattison, St. Mary's Hospital; Montague Pern, Guy's Hospital; Thomas Harold Phillips, University College, Cardiff, and St. Mary's Hospital; Harry Platt, M.S., M.B. Lond., M.B., Ch.B. Vict., Manchester University; Ernest George Thornton Poynder, Cambridge University and Middlesex Hospital; Thomas Bennion Bourne Price, London and Middlesex Hospitals; Joseph Paterson Quigley, M.D., M.S., Queen's University, Kingston, Canada, Queen's University and London Hospital; Maitland Radford, University College Hospital; Herbert Thomas Rettallack-Moloney, London Hospital; Walter Graham Reynolds, St. Mary's Hospital; George Fitz-Patrick Rigden, King's College and Westminster Hospitals; Louis Carnac Rivett, B.A. Cantab., Cambridge University and Middlesex Hospital; Frank Hubert Robbins, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Hugh Huntley Robinson, London Hospital; Ernest Arthur Runting, Middlesex Hospital; Edward Argent Saunders, Middlesex Hospital; William Geoffrey Shaw, London Hospital; Edward Smeed, University College Hospital; Geoffrey Stanger, B.A. Oxon., Oxford University and St. Bartholomew's Hospital; Harold Frieze Stephens, Allahabad University and Guy's Hospital; Roger Papillon Stewart, Manchester University; Adrian Stokes, M.B., B.Ch., B.A.O., Royal University of Ireland, Trinity College, Dublin; James Simpson Strachan, University College, Cardiff, and London Hospital; Robert Swyer, London Hospital; Cedric Rowland Taylor, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; William Farrer Thompson, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Arthur Christopher Tibbits, Birmingham University; Ernest Alfred Tozer, London Hospital; Philip Verdon, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Walter Palmer Vicary, Guy's Hospital; Adolf Lucas Jacob Vischer, M.D. Bâle, Bâle University and St. Bartholomew's Hospital; Lawrence Cecil Walker, B.A. Cantab., Cambridge University and St. Mary's Hospital; Ronald Ogier Ward, B.A. Oxon., Oxford University and St. Bartholomew's Hospital; John Glegg Watson, London Hospital; Percy Whitehead, St. George's Hospital; Frederic St. Barbe Wickham, St. Mary's Hospital; and Harold Addison Woodruff, M.R.C.V.S., University College Hospital.

* M.R.C.S. Diploma granted on April 11th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the First Professional Examination in Anatomy and Physiology for the Diploma of Fellow of the above College, held on May 2nd, 3rd, 7th, 8th, 9th, and 10th, 118 candidates presented themselves for examination, of whom 31 passed and 87 were rejected. The following are the names of the successful candidates:—

Harold George Alexander, M.R.C.S., L.R.C.P., Middlesex Hospital; Lancelot Bromley, M.B., B.C., B.A. Cantab., M.R.C.S., L.R.C.P., Cambridge University and Guy's Hospital; Edward Henry Pollock Brunton, Cambridge University and St. Bartholomew's Hospital; Neil Cantlie, Aberdeen University and London Hospital; Robert Edward Collins, M.B., Ch.B. Edin., M.R.C.S., L.R.C.P., Edinburgh University, Middlesex and London Hospitals; Lionel Palliser Costobadie, Cambridge University and London Hospital; Norman Duggan, M.B., Ch.B. Vict., M.R.C.S., L.R.C.P., Manchester University and St. Bartholomew's Hospital; Arthur Tudor Edwards, B.A. Cantab., Cambridge University and Middlesex Hospital; Hugo Flecker, M.B., Ch.M. Sydney, M.R.C.S., L.R.C.P., Sydney University and King's College; Harold Gardiner, M.B., B.S. Lond., Guy's Hospital; Robert Neville Geach, M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; Howard Davidson Harrison, M.B. Toronto, Toronto University and Middlesex Hospital; Gordon Ley, M.R.C.S., L.R.C.P., London Hospital; Charles William Berry Littlejohn, B.A. Melbourne, Melbourne and Oxford Universities; Ronald Chesney MacQueen, M.B., Ch.B. Edin., Edinburgh University, King's College and St. Mary's Hospital; Rae McRae, M.D., D.P.H. Aberd., Aberdeen University, Middlesex and London Hospitals; Ronald Cathcart Ozanne, B.A. Oxon., Oxford University and Guy's Hospital; Alfred Bernard Pavey-Smith, B.A. Cantab., M.R.C.S., L.R.C.P., Cambridge University and St. Bartholomew's Hospital; John Ernest Pearce, St. Bartholomew's Hospital; Harry Platt, M.S., M.B. Lond., M.B., Ch.B. Vict., M.R.C.S., L.R.C.P., Manchester University; William Agard Pocock, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Nicholas Purcell, M.B., Ch.B. Edin., Edinburgh University and Middlesex Hospital; Alexander Armstrong Rees, M.B., Ch.B. Liverp., M.R.C.S., L.R.C.P., Liverpool University, London and St. Thomas's Hospitals; Geoffrey Bower Richardson, St. Bartholomew's Hospital; Stanley Ritson, B.Sc. Lond., M.R.C.S., L.R.C.P., King's College Hospital; Douglas Compton Taylor, M.B., B.S. Lond., M.R.C.S., L.R.C.P., University College Hospital; William Clair Toll, M.B. Toronto, Toronto University and Middlesex Hospital; Michael Ernest Theodore Demetrius Vlasto, M.B., B.S. Lond., M.R.C.S., L.R.C.P., University College and Middlesex Hospitals; James Owen David Wade, M.B., B.S. Lond., M.R.C.S., L.R.C.P., University College, Cardiff, and Charing Cross Hospital; John St. George Wilson, Liverpool University; and Montague Sydney Woolf, M.A. Birm., Birmingham University.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. F. Selberg has been appointed Surgeon and Dr. von Domarus Physician to the Augusta and Victoria Hospital, Weissensee.—*Genoa:* Dr. Frederico Grignolo has been recognised as *privat-docent* of Ophthalmology.

HARPENDEN SANATORIUM.—The first annual report of the Harpenden Sanatorium in connexion with the National Children's Home and Orphanage, which has just been issued, shows a most satisfactory first year's working. The foundation stone was laid in June, 1909, and the buildings were opened in the following year. Dr. T. N. Kelynack in his medical reports points out that the year was closed on July 31st, 1911. Up to that date 76 cases had been admitted—31 boys and 45 girls. On August 1st, the beginning of the second year, there were 48 cases in residence—14 boys and 34 girls. The accommodation consists of 14 beds and 2 cots for boys, and 33 beds and 2 cots for girls—a total of 47 beds and 4 cots. The average age of the patients was 10 years and 7 months—that of the boys 10 years and 4 months, and that of the girls 10 years and 10 months. The period of residence is entirely controlled by the need of the case and the duration of treatment. In practically all the cases marked general improvement occurred, and even where the local disease was so extensive as to preclude absolute arrest and full recovery the spread of the disease has usually been restricted and its activity lessened. Even in the worst cases much amelioration has been effected and the most trying and painful manifestations of the disease have been alleviated. In a large institution like the National Children's Home, with its 14 branches and 2250 children to care for, there must be a large number of children threatened with tuberculosis, and the sanatorium fills a necessary need of the home and orphanage. Subscriptions and donations should be crossed London City and Midland Bank and made payable to

the Rev. Arthur E. Gregory, National Children's Home, Bonner-road, London, N.E.

A DEVONSHIRE CENTENARIAN.—Mrs. Sophia Gibbons, of Torquay, who had attained the age of 100 years, died on May 3rd.

THE annual Edinburgh dinner of officers of the Indian Medical Service will be held in the Caledonian United Service Club on Friday, May 31st. Sir Alexander Christison, Bart., will be in the chair.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce for publication the following new work and new editions: "A Lecture on Pruritus Vulvæ," by Dr. R. A. Gibbons; "Psychological Medicine" (second edition), by Dr. Maurice Craig, with about 30 plates; and "The Analysts' Laboratory Companion" (fourth edition), by Mr. Alfred E. Johnson.

ROYAL SANITARY INSTITUTE.—A provincial sessional meeting will be held at Blackpool on Friday and Saturday next, May 24th and 25th. On Friday, in the council chamber of the Town-hall, discussions will take place on the Card Index System as applied to Public Health Work, to be opened by Dr. E. W. Rees-Jones (medical officer of health of Blackpool), and a description of the Joint Scheme of Sewerage for Thornton-le-Fylde, Bispham-with-Norbreck, and Carleton, to be opened by Mr. Arthur Hindle. The chair will be taken at 7.30 P.M. by Colonel J. Lane Notter, R.A.M.C. (treasurer of the institute). On Saturday members will inspect the new drainage works of the combined scheme of sewerage for Thornton-le-Fylde, Bispham-with-Norbreck, and Carleton, and the new main drainage, pumping station, and outfall works of the Fleetwood urban district council. Those wishing to be present should send their names to Mr. J. S. Brodie, Municipal Buildings, Blackpool, or to the secretary of the institute, 90, Buckingham Palace-road, London, S.W.

DONATIONS AND BEQUESTS.—The Royal Dental Hospital, Leicester-square, has received a donation of £100 from Mr. R. Nivison.—The committee for the removal of King's College Hospital to Denmark Hill has received the sum of £2000 from Messrs. W. H. Smith and Son in aid of that object.—The late Mr. D. C. Stiebel has bequeathed £500 to the London Hospital.—Prince Alexander of Teck has received the sum of £656 towards the funds of the Middlesex Hospital as the result of the table-decorating display which was recently held at the Ideal Home Exhibition.—The late Mrs. Elizabeth Greaves, of Nottingham, has bequeathed the residue of her estate, about £40,000, in equal shares to the following institutions: The General Hospital, Nottingham; the Dispensary, Broad-street, Nottingham; the Nottingham and Midland Eye Infirmary; the Samaritan Hospital for Women, Nottingham; the Midland Institute for the Blind, Nottingham; the Nottingham and Nottinghamshire Adult Deaf and Dumb Society, the Nottingham and Nottinghamshire Convalescent Homes, Dr. Barnardo's Homes, and the Gordon Homes Institution.—The following, among other charitable bequests, have been made under the will of the late Mrs. Elizabeth Rebecca Johnson, of Bournemouth: £5000 each to the Radcliffe Infirmary, Oxford, and the Royal Berkshire Hospital, Reading; £4000 each to the Firs Home, Bournemouth, the Victoria Hospital, Bournemouth, the Gore Farm Convalescent Hospital, Dartford, Kent, Dr. Barnardo's Homes, the Royal London Orphan Asylum, Watford, the National Society for the Prevention of Cruelty to Children, and the Royal Society for the Prevention of Cruelty to Animals; £3000 each to the Royal Hospital for Incurables, West-hill, Putney, and "Her Majesty's Hospital, Stepney-causeway, connected with Dr. Barnardo's Homes"; £2000 each to the Bournemouth Sanatorium for Diseases of the Chest, the Boscombe Hospital, the Royal National Hospital for Consumption, Ventnor, the Waterloo Hospital for Children and Women, the National Hospital for Diseases of the Heart, the British Home and Hospital for Incurables, the Northern Convalescent Hospital, Winchmore-hill, N., the Infirmary for Consumption and Diseases of the Chest and Throat, Margaret-street, W., the Free Home for the Dying, Clapham, the Wimbledon Hospital for Infectious Diseases, the Royal Free Hospital, the Central London Ophthalmic Hospital, and the Royal Blind Pension Society; £1000 each to the Mildmay Mission Hospital, Bethnal Green, the North-Eastern Fever Hospital, the Nottingham General Hospital, the Dorset County Hospital, the West-end Hospital for Diseases of the Nervous System, Paralysis, and Epilepsy, the Invalid Children's Home, Margate; and £500 each to the Charity Organisation Society, the National Society for the Employment of Epileptics, the Chelsea Hospital for Women, and the London Temperance Hospital.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. L. Rolland, senator for Tarn-et-Garonne.—Dr. L. Scouly, professor of clinical surgery in the Jassy Medical School.—Dr. Marc See, formerly surgeon to the Paris hospitals, member of the Academy of Medicine.—Dr. Schatz, medical councillor, district physician of Tauberbischofsheim, Baden.—Dr. M. Zeller, medical councillor of Stuttgart.—Dr. F. Voigt, sanitary councillor of Bad Oeynhausen.

MEDICAL SOCIETY OF LONDON.—At the second general meeting of this society, held on May 13th, the following officers and members of the council were duly elected:—President: Sir Watson Cheyne, Bart. Vice-Presidents: Sir David Ferrier, Dr. William Ewart, Dr. Percy Lush, and Mr. Arthur E. Barker. Treasurer: Sir John Tweedy. Librarian: Dr. Arthur Francis Voelcker. Honorary Secretaries: Mr. Edred M. Corner and Dr. Robert A. Young. Honorary Secretary for Foreign Correspondence: Dr. Frederick Parkes Weber. Council: Sir Maurice Abbot-Anderson, Mr. John Bland-Sutton, Dr. J. Mitchell Bruce, Dr. Guthrie Neville Caley, Dr. J. Walter Carr, Mr. Willmott H. Evans, Mr. Duncan Fitzwilliams, Dr. Herbert French, Dr. Leonard G. Guthrie, Dr. William Hill, Dr. William Hunter, Mr. A. Corrie Keep, Dr. Zebulon Mennell, Dr. G. Harrison Orton, Mr. D'Arcy Power, Dr. David Lloyd Roberts, Mr. H. Betham Robinson, Dr. Frederick J. Smith, Dr. StClair Thomson, and Dr. Guy M. Wood.

ROYAL MICROSCOPICAL SOCIETY.—A meeting of this society was held on April 17th, Mr. H. G. Plimmer, the President, being in the chair. Among the donations announced was one from the executors of the late Lord Lister of a marble bust of his father, Joseph Jackson Lister, who was one of the founders of the society. Mr. J. W. Ogilvy exhibited an inclinable Greenhough Binocular Microscope by Leitz. This was an improvement on previous models, which were of the upright type. He also showed Edinger's Double Ocular for demonstration purposes. By means of a right-angled prism and a second eye-piece standing out horizontally a teacher can, by the aid of a pointer, which is fitted in the eye-piece, direct the attention of a student to any point in the object under observation. The apparatus can also be applied in photomicrography, permitting the object to be focussed without disturbing the camera. Mr. F. W. Watson Baker exhibited and described a New Instantaneous Reflex Photomicrographic Camera by means of which microscopic living objects, such as pond life, can be photographed. The image formed by the microscope is thrown on to a ground-glass screen in the side of the camera by means of a mirror placed at an angle of 45°, and when the object is exactly in focus, by pressing a pneumatic ball the mirror is swung instantly to the side, the plate is exposed and the photograph taken. The duration of the exposure can be varied. The apparatus is well arranged and of quite moderate size. Mr. J. D. Siddall, of Chester, read a paper on the Life History of Some Marine Diatoms from Bournemouth. Living and mounted examples, drawings, photographs, and lantern slides were exhibited in illustration of his observations, the chief interest of which centred in a coscinodiscus, about 1/400 in. in diameter, furnished with very numerous radiating pseudopodial filaments. The specimens shown demonstrated the certainty of this beyond any possibility of doubt, and thereby set at rest the old and much-debated controversy as to the possession and utilisation of pseudopodial appendages, at any rate in this particular diatom, which for the sake of convenience, he proposed should receive the specific name heliozoides. The presence of pseudopodial appendages much smaller, fewer, and still more difficult to discern was also notified in melosira, surirella, biddulphia, and triceratium. The cause of the peculiar movement of Bacillaria paradoxa was also briefly discussed in the paper, which concluded with the suggestion that further study of living diatoms with modern microscopical appliances would explain much of the meaning and

purpose of the exquisite minutiæ of their siliceous skeletons. A paper by Mr. E. B. Stringer "On a Modified Form of the Lever Fine Adjustment and a Simple Turn-out Device for the Substage Condenser" was then read. The essential feature of the fine adjustment was that the movement of the lever was carried to the top of the limb by means of a strong steel pin working through a guide, the opposing spring being at the bottom and friction between the lever and the pin eliminated by means of a ball-bearing. Freedom from lateral movement and greater sensitiveness were thus secured. A simple two-speed movement was also provided. The turn-out device acted on the top lens of the condenser alone, thus affording illumination adapted to the power of the objective in use. A note was added on the value of the Bertrand lens in ordinary microscopical work.

COURSES AND BURSARIES FOR WOMEN DENTAL STUDENTS.—Full courses have been arranged for women students, for the study of dentistry and in preparation for the Licence in Dental Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women and the National Dental Hospital, Great Portland-street, W. The course is arranged to cover five years. The council of the London School of Medicine for Women will award annually (until further notice) an "Agnes Guthrie" Bursary, of the value of £60, to a student fulfilling the required conditions who enters for the full dental course. The first award will be made at the end of September, 1912, for the course beginning in October, 1912. Candidates for the bursary are required to send in applications on or before Sept. 15th, 1912, to the Secretary and Warden, 8, Hunter-street, Brunswick-square, W.C., from whom all particulars can be obtained.

PRESENTATION TO DR. ROBERT SAUNDBY.—At a meeting of the governors of the General Hospital, Birmingham, on May 9th, Dr. Robert Saundby, who has recently resigned the position of honorary physician which he had held for 27 years, was the recipient of gifts presented by a large number of subscribers who desired to express their high appreciation of the able manner in which he had discharged the duties of his position, of the great skill and attention he devoted to the patients under his care, and of the interest he had taken in the welfare of the institution. The Lord Mayor (Alderman Bowater) occupied the chair. Mr. J. C. Vaudrey, the chairman of the board of management, presented a portrait of Dr. Saundby by Mr. Frank W. Carter on behalf of the subscribers. The portrait, which is an excellent likeness, shows Dr. Saundby in his doctor's robes and wearing the badge of the President of the British Medical Association; it will be hung in the board room. The senior physician, Sir Robert Simon, then asked the Lord Mayor to present Dr. Saundby with a silver-gilt rose-bowl and an illuminated address. Mrs. Saundby was presented with a necklace of gold and silver set with emeralds and pearls.

THE FRENCH HOSPITAL.—The French Ambassador presided at the forty-fourth annual dinner of the French Hospital, which took place at the Hotel Cecil on May 11th. The company present included the Lord Mayor, the Sheriffs of London, various members of Le Corps Diplomatique, the hospital staff, and over 300 supporters and contributors to the hospital. Despite the depressing effect of the Insurance Act and the consequent decrease in hospital subscriptions, also the depletion of the public purse by the large sums collected of late for other charitable purposes, subscriptions to the amount of £3800 were announced by the secretary. After the loyal toasts, those of the Diplomatic Body, and that of the Lord Mayor, had been proposed by His Excellency in his usual felicitous terms, he gave the toast of "Le Corps Médical," paying an especial tribute to Dr. Vintras, which was responded to by Dr. George Ogilvie, the senior physician to the hospital. In the course of his reply to the toast Dr. Ogilvie said: "Il est presque superflu de dire que le but de notre profession est de prévenir ou de guérir la maladie, et si nous n'obtenons pas ces résultats, alors notre but est de soulager l'humanité souffrante et de prolonger la vie. Dans l'esprit du médecin il reste toujours une vive et durable impression de deux phases de son travail; l'une, la reconnaissance de ceux qu'il a secourus et aidés, l'autre, la résignation paisible dans la souffrance—qui est en vérité un tribut à la noblesse de la nature humaine. Messieurs, la reconnaissance des malades n'est, elle pas la plus douce recompense d'un médecin, car, si c'est la curiosité des maladies qui fait le savant, c'est l'amour des malades qui fait le médecin."

THE BRITISH MEDICAL BENEVOLENT FUND GUILD.—The good work which is being done by the British Medical Benevolent Fund has been referred to in our columns on many occasions, and the Guild, which is held in connexion with the Fund—practically the ladies' branch—to which we have also alluded from time to time, gives supplementary help and practical sympathy in time of trouble to the beneficiaries of a more personal character than is possible for the parent society to give. In THE LANCET of April 6th, p. 948, will be found a very full report of the annual general meeting of the Fund, and the activities of the Guild are there shown to be playing a necessary rôle in the work of relieving distress among medical men and their dependents who have fallen upon evil days. Such work deserves the support not only of the medical profession but also of the public at large, to whom the profession renders important service and to whose safety and welfare it largely contributes. With the object of enlisting such support a grand matinée will be given in aid of the Guild at St. James's Theatre on Thursday, June 6th, at 2.45 P.M., when a magnificent programme will be provided, Sir George Alexander having generously lent the theatre for the occasion. Among those who have consented to contribute are Mrs. Patrick Campbell, Sir George Alexander, and Mr. Cyril Maude, who will take part in the first act of *The Second Mrs. Tanqueray;* Miss Marion Terry, Miss Lilian Braithwaite, and Sir Herbert Tree, who will appear in a scene from *Colonel Newcome;* Miss Violet Vanbrugh and Mr. Arthur Bourchier, who will be the principal characters in a one-act play; Miss Irene Vanbrugh, Miss Hilda Trevelyan, and Mr. Gerald du Maurier, who will perform Mr. J. M. Barrie's *A Slice of Luck;* and Miss Lena Ashwell, who will appear in *The Constant Husband.* The matinée has the patronage of distinguished members of society, and it is hoped that £1000 may be raised for the Guild. No advertising through ordinary channels will be undertaken, and we earnestly appeal to members of the profession to make the needs of the Guild known and also the matinée, through which it is proposed to aid in supplying those needs. The prices of admission are: Stalls, £2 2*s.*; dress circle, £1 1*s.* and 10*s.* 6*d.*; upper circle, 7*s.* 6*d.* and 5*s.*; and gallery, 4*s.* Two boxes, each holding eight persons, can also be engaged.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Select Committee on Patent Medicines.

THE Select Committee of the House of Commons which has been constituted to inquire into the subject of patent medicines began hearing evidence on Thursday, May 9th. Sir HENRY NORMAN was the chairman. The first day's evidence was official departmental evidence.

Sir NATHANIEL HIGHMORE, solicitor to the Board of Customs and Excise, made a statement to the Committee in regard to the revenue statutes bearing on the sale of patent medicines. The revenue derived from the stamps issued for patent medicines was £327,000, and in 1908 over 41 million stamps had been sold.

Mr. LYNCH (a member of the Committee) said that an enormous sum of money must be spent yearly on American patent medicines. Could the witness tell the Committee by means of the stamps sold the amount of money paid for these medicines?

Sir N. HIGHMORE: No, I do not think so. The stamps are very largely sold over the counter, and it is not known who the person purchasing them is, or for what purpose he is going to use them. The duty applies to a range of prices.

The CHAIRMAN pointed out that the words "No Government guarantee" appeared on the stamps. Was that inscription put on by the Customs and Excise on their own authority?

Sir N. HIGHMORE: No; the pressure came from the outside. We had statements made to us that we were considered responsible for the contents of the packages.

The CHAIRMAN: If the Committee want to get an official answer to a difficult question regarding the law as to patent medicines, to what Government department should that inquiry be addressed?

Sir N. HIGHMORE: I really do not know, but I should think it might be addressed to the Privy Council or the Home Office.

The CHAIRMAN: Does not the fact that you come here before us in this responsible legal capacity and cannot give us this information point

to an extraordinary condition of the law? Can you tell the Committee who is the responsible person or department to whom application should be made?

Sir N. HIGHMORE: If I had had any idea that this question was going to be put to me I would have ascertained.

The CHAIRMAN: We should like you to ascertain this information for us. Can you tell us whether there is anything in the law which would prevent any person making any medicine containing any mixture, except poison, and advertising it as a cure for any disease and selling it broadcast to the public on payment of the stamp duty?

Sir N. HIGHMORE: Excluding poison, No.

The CHAIRMAN: I am very anxious to have an unqualified reply.

Sir N. HIGHMORE: I know of nothing.

Mr. H. LAWSON (a member of the Committee): Is it not the case that police proceedings can be taken where there is manifest fraud?

Sir N. HIGHMORE: I take it where there is absolute fraud the police would have the power. Possibly a conviction could be obtained on a false trade description.

The CHAIRMAN: I want to know this. Are the police entitled under the law to take action on the ground that a certain mixture advertised as a cure for a certain disease is a fraud?

Sir N. HIGHMORE: No.

The CHAIRMAN: I thought you said they could.

Sir N. HIGHMORE: For practical purposes I do not think they could. Witness was understood to assent to the proposition that motives of public policy might induce the police not to exercise what powers they might possess. They might not desire to give an advertisement to the preparation in question. There might be a case if actual fraud could be definitely proved.

The CHAIRMAN: Has there ever been a case for which the police have brought action?

Sir N. HIGHMORE: I do not think so.

Mr. LEDLIE, deputy clerk to the Privy Council, was the next witness. He said that the law as to patent medicines stood in need of revision. He narrated the steps which the General Medical Council, the Privy Council, and the Local Government Board had taken to obtain through medical officers of health reports as to unqualified medical practice and referred the Committee to the Blue-book containing those reports. If the schedule of poisons was extended the Privy Council, in his view, was the best official body to provide the necessary administrative machinery. Prosecutions at present were undertaken by the Pharmaceutical Society.

Mr. GLYN-JONES (a member of the Committee) asked whether patent and proprietary medicines which contained ingredients mentioned in the Schedule of Poisons came under the regulations of the Pharmacy Act.

Mr. LEDLIE: Yes, certainly. Witness pointed out that the Pharmaceutical Society with the assent of the Privy Council could declare that other substances were poisons and in this case the regulations of the Pharmacy Act would also apply.

The CHAIRMAN: Then the matter comes to this, that any combinations of substances, however poisonous, which have been devised, but are not scheduled, may be sold with impunity.

Mr. LEDLIE: Yes, that is so.

The committee adjourned for a week.

HOUSE OF COMMONS.

WEDNESDAY, MAY 8TH.

Conscientious Objectors to Vaccination.

Mr. KING asked the Secretary of State for the Home Department whether his attention had been given to the practice of a certain bench of magistrates who had agreed that none of them would on any occasion sign the form for conscientious objection to vaccination if applied to individually; whether, in consequence, every conscientious objector was obliged to apply to the bench at sittings of the court, thus being obliged, in many cases, to travel long distances and to lose a day's wages; and whether he would inform clerks to justices that this practice was a breach of the spirit of the law, and was calculated to shake the confidence of the public in the administration of the law.—Mr. MCKENNA (in a written answer) replied: Yes, sir, but I have no authority to give instructions to magistrates in this matter. I fully agree with my honourable friend that poor persons should be enabled to make these declarations without unnecessary expense or trouble, and I cannot think that there are many magistrates who desire to refuse them facilities for this purpose.

The Remuneration of Post Office Medical Officers.

Mr. WATT asked the Postmaster-General whether a fixed rate per head per annum was allowed to medical men for attendance on Post Office officials in the Glasgow Post Office; if so, what was that rate and what services were given in exchange for it; did it include medicines; did it apply to picked lives; and was the rate for his department the same throughout the rest of the country.—Mr. HERBERT SAMUEL wrote in reply: Post Office medical officers, alike at Glasgow and elsewhere, are remunerated by a uniform capitation fee of 8*s.* 6*d.* per annum in respect of each member of the local staff placed under their charge, no distinction being made between picked lives and others. The remuneration thus calculated covers the supply of medicines and all such ordinary medical treatment as is sought from a general practitioner, besides periodical sanitary inspection of Post Office buildings, reporting on the physical or mental condition of all officers whose retirement is in question or whose fitness for a particular duty may be in doubt, and, speaking generally, assisting the Postmaster-General with their professional knowledge and performing such advisory functions as are necessary to the welfare of the Post Office staff.

THURSDAY, MAY 9TH.

The Straits Settlements Medical School.

Mr. MCCALLUM SCOTT asked the Secretary of State for the Colonies whether any attempt had been made to affiliate the Straits Settlements Medical School with any of the British universities in the same way as the Ceylon Medical College was affiliated; how many students presented themselves at the last examination for diplomas at the Straits Medical School; how many of them failed to obtain diplomas; whether he was aware that at the presentation of diplomas in December last Dr. Keith, the principal of the school, called attention to the number of failures, and stated that they were due to the lack of a proper teacher of surgery in the school; whether he was aware that there was no hospital in Malaya which possessed a properly equipped operating theatre, and that there was dissatisfaction throughout the colony at the absence of any Government encouragement to the development of efficient surgery; and whether the Government proposed to take any action.—Colonel SEELY (on behalf of Mr. L. HARCOURT) said in reply: As regards the first four parts of the question, the Secretary of State has no information. As regards the fifth, he can only say that he has had no complaint as to the lack of facilities for operations or the absence of Government encouragement to the development of efficient surgery. The Government of the colony may be relied upon to take whatever action may be considered necessary in the interests of the health of the community.

Medical Benefits under the Insurance Act.

Mr. F. HALL (Dulwich) asked the Secretary to the Treasury whether it was proposed to make any reduction in the contribution payments under the National Insurance Act if, owing to no arrangements or an incomplete understanding only being come to with the medical profession, the medical benefits under the Act had to be wholly or partly suspended at the outset.—Mr. MASTERMAN answered: No, sir. If medical benefit is suspended the Act provides that the insured persons will receive its actuarial equivalent—that is, in the case of men, 9*d.* for every 4*d.* contributed by them in respect of medical benefit, and in the case of women 8*d.* for every 3*d.* so contributed.

The Care of the Feeble-minded.

Mr. MCKENNA informed Lord Ninian Crichton-Stuart that he proposed to bring in very shortly a Bill dealing with the care of the feeble-minded.

MONDAY, MAY 13TH.

Medical Treatment of London Telegraphists.

Mr. COOPER asked the Postmaster-General whether he would state the number of male telegraphists in the Central Telegraph Office, London, who during the past fortnight had required urgent medical treatment whilst on duty or had had to be escorted by another official to their homes; whether there were a number of men at present absent either through nervous complaints or undergoing hospital treatment for eye-strain; whether these cases could be attributed to the expressed official demands for the attainment of certain averages; and whether he would cause a full inquiry to be made into the prevailing conditions in that office.—Mr. H. SAMUEL replied: I am making inquiry and will inform the honourable Member of the result.

Medical Benefits under the Insurance Act.

Mr. COOPER asked the Chancellor of the Exchequer (1) whether the Government or the Insurance Commissioners had yet determined the amount to be paid to chemists for medicine, drugs, and appliances under the National Insurance Act; if so, what was the amount per each insured person; and what was the definition of what a chemist had to supply for this sum; (2) whether it was now the intention of the Government to allow medical men to do their own dispensing; and (3) whether the proposed payment of 6*s.* per head of insured persons for medical attendance would be increased; would chemists still receive 1*s.* 6*d.* per head of insured persons; and would that sum be provided by the doctors or by the Insurance Fund.—Mr. LLOYD GEORGE furnished the following written reply: Questions connected with the administration of medical benefit are being considered in conference with the medical representatives on the Advisory Committee, and I can make no statement at present as to the result of these deliberations.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND COMPANY, LIMITED, 44 and 45, Rathbone-place, London, W.

The Sexual Life of the Child. By Dr. Albert Moll. Translated from the German by Dr. Eden Paul. Price 15*s.* net. (Publisher's Note: The sale of this book is limited to members of the Medical, Scholastic, Legal, and Clerical Professions.)

BAILLIÈRE, J. B., ET FILS, Paris.

Les Actualités Médicales. Tuberculinothérapie et Sérothérapie Antituberculeuse Par Albert Sézary, Médecin assistant du Dispensaire antituberculeux de l'Hôpital Laënnec, Chef de Clinique adjoint à la Faculté de Médecine de Paris. Price Fr.1.50.

FISCHER, GUSTAV, Jena.

Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Einundzwangiste Lieferung. Band IV. Physiologie der Reizaufnahme, Reizleitung und Reizbeantwortung. Price M.8.

HEINEMANN, WILLIAM, London.

Experimental Domestic Science. By R. Henry Jones, M.Sc., F.C.S., Head of the Chemical Department, Harris Institute, Preston; Lecturer in Science, School of Domestic Science, Preston. Price 2*s.* 6*d.*

HIRSCHWALD, AUGUST, Berlin.

Practicum der physiologischen und pathologischen Chemie, nebst einer Anleitung zur anorganischen Analyse für Mediciner. Von Dr. E. Salkowski, Prof. o.h. an der Universität, Geh. Med.-Rat

und Vorsteher der chemischen Abteilung des Pathologischen Instituts zu Berlin. Vierte vermehrte Auflage. Price, bound, M.8.

Die Zuckerkrankheit und ihre Behandlung. Von Professor Dr. Carl von Noorden, Vorstand der I. medizinischen Universitätsklinik in Wien. Sechste vermehrte und veränderte Auflage. Price M.10.

Einführung in die Lehre von der Bekämpfung der Infektionskrankheiten. Von E. v. Behring, Marburg. Price M.15.

Die Gynäkologische Operationskursus. Mit besonderer Berücksichtigung der Operations-Anatomie, der Operations-Pathologie, der Operations-Bakteriologie und der Fehlerquellen. In sechzehn Vorlesungen. Von Dr. Wilhelm Liepmann, Privat-dozent für Geburtshilfe und Gynäkologie an der Friedrich Wilhelms-Universität zu Berlin. Zweite neubearbeitete und vermehrte Auflage. Price M.24.

LEWIS, H. K., London.

For and against Experiments on Animals. Evidence before the Royal Commission on Vivisection. By Stephen Paget, F.R.C.S., Hon. Secretary, Research Defence Society. With an Introduction by the Right Hon. the Earl of Cromer, O.M., G.C.M.G., G.C.B. Price 3*s.* 6*d.* net.

Landmarks and Surface Markings of the Human Body. By L. Bathe Rawling, M.B., B.C. Cantab., F.R.C.S. Eng. Fifth edition. Price 5*s.* net.

LIVINGSTONE, E. AND S., Edinburgh.

Wheeler's Handbook of Medicine. By William R. Jack, B.Sc., M.D., F.R.F.P.S.G., Assistant Physician to the Western Infirmary of Glasgow. Fourth edition. Price not stated.

LONGMANS, GREEN, AND CO., London, New York, Bombay, and Calcutta.

Modern Science and the Illusions of Professor Bergson. By Hugh S. R. Elliot, Editor of "The Letters of John Stuart Mill." With a Preface by Sir Ray Lankester, K.C.B., F.R.S. Price 5*s.* net.

MARHOLD, CARL, Halle a.S.

Ueber Pyodermien, die Infektionen der Haut mit den banalen Eitererregern. Von J. Jadassohn, Bern. Price, M.1.80.

Die diagnostische und prognostische Bedeutung der Harnsedimente, nach neueren Anschauungen. Von Dr. C. Posner, ao. Prof. an der Universität Berlin. Price, M.1.40.

PHARMACEUTICAL PRESS, THE, 72, Great Russell-street, London, W.C.

The Pharmaceutical Pocket Book, 1912-13. The Science and Art of Dispensing and A Dictionary of Synonyms. Edited by John Humphrey. Price 2*s.* 6*d.* net. (Post free, 2*s.* 8*d.*)

SAMPSON LOW, MARSTON, AND COMPANY, LIMITED, London.

The Human Eye. Diagrams and Descriptions illustrating its Structures, Functions, Diseases, and Attachments, with special reference to it as an Optical Instrument. By J. Gray-Keith, Formerly Assistant Optician to Her Late Majesty the Queen and Royal Family, Late Lecturer in the Physical Sciences, Queen's College. Price 21*s.* net.

SHERRATT AND HUGHES, University Press, 34, Cross-street, Manchester.

Diseases of the Nervous System. By Judson S. Bury, M.D. Lond., F.R.C.P., B.Sc. Victoria, Senior Physician to the Manchester Royal Infirmary, Professor of Clinical Medicine in the University of Manchester, Examiner in Medicine to the Royal College of Physicians, London. Price 15*s.* net.

SPRINGER, JULIUS, Berlin.

Synthese der Zellbausteine in Pflanze und Tier. Lösung des Problems der künstlichen Darstellung der Nahrungsstoffe. Von Professor Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität zu Halle a.S. Price, paper, M.3.60; bound, M.4.40.

Praktische Neurologie für Aerzte. Von Professor Dr. M. Lewandowsky in Berlin. Price, paper, M.6.80; bound, M.7.60.

Physiologisches Praktikum. Chemische und physikalische Methoden. Von Prof. Dr. Emil Abderhalden, Direktor des physiologischen Institutes der Universität zu Halle a.S. Price, paper, M.10; bound, M.10.80.

UNIVERSITY TUTORIAL PRESS, LIMITED (W. B. CLIVE), London.

Text-book of Hygiene for Teachers. By Robert A. Lyster, M.D., Ch.B., B.Sc. Lond., D.P.H., B.Sc. Public Health, County Medical Officer of Health for Hampshire, and Chief Medical Officer to the Education Committee of the Hampshire County Council. Price 4*s.* 6*d.*

URBAN UND SCHWARZENBERG, Berlin und Wien.

Diagnose der Simulation nervöser Symptome. Ein Lehrbuch für den Praktiker. Von Priv.-Doz. Dr. Siegmund Erben, Wien. Price, paper, M.7; bound, M.8.50.

VIGOT FRÈRES, Paris.

Hydrologie Élémentaire à l'Usage des Médecins. Par Allyre Chassevant, Professeur agrégé à la Faculté de Médecine de Paris. Price Fr.4.

Clinique Thérapeutique de la Faculté de Médecine de Paris, Hôpital Beaujon. Thérapeutique Usuelle du Praticien. Traitement de la Tuberculose. Par Albert Robin, Professeur de Clinique Thérapeutique à la Faculté de Médecine de Paris, Membre de l'Académie de Médecine. Troisième Série. Price Fr.8.

WILLIAMS AND NORGATE, 14, Henrietta-street, Covent Garden, London, W.C. (HOLT, HENRY, AND CO., New York.)

Home University Library of Modern Knowledge: Psychology. The Study of Behaviour. By William McDougall, M.B., Reader in Mental Philosophy in the University of Oxford. Price, cloth, 1*s.* net.; leather gilt, 2*s.* 6*d.* net.

Home University Library of Modern Knowledge: The Principles of Physiology. By John Gray McKendrick, M.D., LL.D., F.R.S., F.R.C.P.E., M.R.I., Emeritus-Professor of Physiology, University of Glasgow. Price, cloth, 1*s.* net.; leather gilt, 2*s.* 6*d.* net.

Appointments.

Successful applicants or Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CAMPBELL, PATRICK J., M.B., B.S. N.U.I., has been appointed Medical Officer of Drumquin Dispensary District, County Tyrone.

FOULKES, P. G., M.B., B.S. Lond., has been appointed Medical Officer for the Aveley District of the Orsett Board of Guardians.

MASON, H., M.B., B.S. Edin., has been appointed Senior Assistant School Medical Officer by the North Riding Education Committee.

ORCHARD, J. RUSSELL, M.B., B.S. Edin., has been appointed House Surgeon at Torbay Hospital, Torquay.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALNWICK INFIRMARY.—House Surgeon, unmarried. Salary £140 per annum, with apartments, attendance, &c.

BANGOR, CARNARVONSHIRE AND ANGLESEY INFIRMARY.—House Surgeon. Salary £100 per annum, with board, washing, and lodging.

BEDFORD, BEDFORDSHIRE COUNTY COUNCIL.—Assistant School Medical Officer and Deputy County Medical Officer of Health. Salary £300 per annum.

BELFAST, ROYAL VICTORIA HOSPITAL.—Four Resident Medical Officers for six months.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road, Birkenhead.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £75 per annum, with board, rooms, and laundry.

BIRMINGHAM GENERAL DISPENSARY.—Resident Surgeon for two or three months. Salary £4 4*s.* per week, with apartments.

BIRMINGHAM UNION INFIRMARY, Dudley-road.—Resident Assistant Medical Officer. Salary £104 per annum, with apartments, rations, laundry, attendance, &c.

BRADFORD ROYAL EYE AND EAR HOSPITAL.—House Surgeon (Male non-resident or Female resident).

BRADFORD ROYAL INFIRMARY.—Honorary Dental Surgeon.

BRENTWOOD, ESSEX AND COLCHESTER ASYLUM.—Assistant Medical Officer. Salary £160 per annum, with board, &c. Also Assistant Medical Officer. Salary £150 per annum, with board, &c.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—Assistant House Surgeon, unmarried. Salary £80 per annum, with apartments, board, and laundry.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—Resident Medical Officer, unmarried. Salary £160 per annum, with rooms, coals, gas, and attendance.

BRISTOL GENERAL HOSPITAL.—House Physician for six months. Salary £80 per annum, with board, residence, &c.

BRITISH LYING-IN HOSPITAL, Endell-street, W.C.—Resident Medical Officer. Salary at rate of £50 per annum, with board, lodging, and washing.

BRIXTON DISPENSARY, Water-lane, S.W.—Resident Medical Officer, unmarried. Salary £150 per annum, with apartments, attendance, &c.

BURY INFIRMARY.—Senior House Surgeon and Junior House Surgeon. Salary £110 and £80 per annum respectively, with board, residence, and washing

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W. — Clinical Assistant.

CHELSEA INFIRMARY, Cale-street, S.W.—Second Assistant Medical Officer. Salary £100 per annum, with board, washing, apartments, &c.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, lodging, and washing.

DENBIGH, DENBIGHSHIRE INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

DORCHESTER, COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £160 per annum, with board, &c.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

DUNDEE DISTRICT ASYLUM.—Senior Resident Medical Officer and Junior Resident Medical Officer. Salary £150 and £120 per annum respectively, with board and apartments.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer to the Casualty Department for six months. Salary at rate of £100 per annum, with luncheon and tea. Also Second Medical Officer to Casualty Department for six months. Salary at rate of £40 per annum, with luncheon and tea.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, London, S.E.—House Surgeon for six months. Salary at rate of £75 per annum, with board, residence, and washing.

FRIMLEY, BROMPTON HOSPITAL SANATORIUM —Assistant Resident Medical Officer. Salary £150 per annum, with board and residence.

HUDDERSFIELD ROYAL INFIRMARY.—Assistant House Surgeon. Salary £80 per annum, with board, residence, and laundry.

INDIAN MEDICAL SERVICE, India Office, London.—Twelve Commissions.

ISLE OF MAN LUNATIC ASYLUM.—Assistant Medical Officer, unmarried. Salary £175 per annum, with board, quarters, and washing.

ITALIAN HOSPITAL, Queen-square, W.C.—House Surgeon for six months. Salary £60 per annum, with board and residence.

LEEDS GENERAL INFIRMARY.—Resident Obstetric Officer for six months. Board, residence, and washing provided. Also Resident Medical Officer at the Ida and Robert Arthington Hospitals for six months. Salary £30, with board, residence, and washing.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board and lodging.

LEICESTER INFIRMARY.—Assistant House Physician for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

MANCHESTER, VICTORIA UNIVERSITY.—Professor of Forensic Medicine.

MANCHESTER WORKHOUSE HOSPITALS, West Didsbury, near Manchester.—Third Assistant Resident Medical Officer. Salary £120 per annum, with rations, apartments, and attendance.

MELBOURNE UNIVERSITY, Victoria, Australia.—Chair of Veterinary Pathology and Directorship of the Veterinary Institute. Salary £900 per annum.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Gynæcologist.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160 per annum.

NEW HOSPITAL FOR WOMEN.—Two House Surgeons, One House Physician, One Obstetric Assistant, and One Clinical Assistant (all females).

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—House Physician and House Surgeon. Salary £80 and £60 per annum, with board, residence, and laundry.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Casualty Officer for six months. Salary £60 per annum, with board, lodging, and washing.

NOTTINGHAM GENERAL HOSPITAL.—Locum Tenens. Salary at rate of £3 3s. per week, with board, lodging, and washing.

POPLAR HOSPITAL FOR ACCIDENTS, Poplar, E.—Senior House Surgeon. Salary at rate of £135 per annum, with board and residence.

POWICK, COUNTY AND CITY ASYLUM, Worcester.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, washing, and attendance.

QUEEN ADELAIDE'S DISPENSARY, Pollard-row, Bethnal Green, E.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, coal, gas, and attendance.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, residence, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, London, N.E.—Casualty House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

ST. GEORGE'S DISPENSARY AND SCHOOL CLINIC, Surrey-row, Blackfriars, S.E.—Assistant Medical Officer. Salary at rate of 100 guineas per annum.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, &c.

SHEFFIELD ROYAL HOSPITAL.—Sixth Resident, unmarried. Salary £60 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Ear and Throat House Surgeon. Salary £70 per annum.

SHEFFIELD UNIVERSITY.—Demonstrator in Anatomy. Salary £150 per annum.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—House Physician. Salary £82 per annum, with board, residence, and laundry. Also House Surgeon. Salary £100 per annum, with board, residence, and laundry.

STAMFORD, RUTLAND, AND GENERAL INFIRMARY AND FEVER HOSPITAL.—House Surgeon. Salary £150 per annum, with board, lodging, and washing.

TEIGNMOUTH HOSPITAL, S. Devon.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician. Salary £80 per annum.

WALSALL AND DISTRICT HOSPITAL.—House Physician and Casualty Officer. Salary £90 per annum, with board, residence, and laundry.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, rooms, and laundry.

Births, Marriages, and Deaths.

BIRTHS.

COMRIE.—On May 12th, at Manor-place, Edinburgh, the wife of John D. Comrie, M.D., F.R.C.P.E., of a daughter.

MILLER.—On May 10th, at 25, Neville Court, N.W., the wife of Dr. Reginald Miller (53, Queen Anne-street), of a son.

ROBINSON.—On May 13th, at Brechin-place, Gloucester-road, S.W., to Dr. and Mrs. Henry Robinson, a son.

THORNLEY.—On May 6th, at Ravensdene, Scarborough, the wife of Dr. J. Hardwick Thornley, of a daughter.

MARRIAGES.

INGRAM—MCCANDLISH.—On May 1st, at All Saints, Puerto Orotava, Teneriffe, Dr. James K. D. Ingram to Letitia Mary, daughter of the late William McCandlish, C.E., of The Knoll, Blackheath.

WIGGINS—BRÉTING.—On May 11th, at the Parish Church, Watlington, Oxon., William Denison Wiggins, M.R.C.S., L.R.C.P., D.P.H., to Marie Julie, only daughter of Frederick A. Bréting, of Geneva.

DEATHS.

ROBINSON.—On May 9th, at Walton-road, Bognor, Richard Swanne Robinson, M.R.C.S. Eng., late Lieutenant-Colonel, Royal Horse Artillery (Bengal), in his 74th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SANITARY PROGRESS AT WORTHING.

EXCELLENT results have been achieved at Worthing in the saving of infant life. The average infant mortality rate for ten years stood at a very high figure, but of late years there have sprung up not only the various agencies that are at work under the control of the local authority but also the Children's Care Society, and so successful have all these been that the percentage figure of infant mortality has shown a decrease of 42 per cent. upon the average of the last ten years. Lectures are to be given in the schools to parents on the care of the teeth, teachers are to give lessons to the children periodically, and there are to be tooth-brush clubs and tooth-brush drills. It is thus being gradually realised that the mental and physical development of the children attending the elementary schools is much hindered by the wholesale neglect from which their teeth are suffering, and further, that their susceptibility to diseased conditions is far higher than it would be if their mouths were healthy. The Board of Education is showing its willingness to assist local authorities in this important work.

"CYTAX."

A NEW form of hæmacytometer is described by Dr. Tojbin, Berlin, in the *Medizinische Klinik*, No. 11, 1912. The author claims for his apparatus for counting automatically the blood corpuscles and other cells of the blood that it is the first apparatus in the "service of medicine" in this regard, and he further claims that it gets rid of the tiresome process of counting and then calculating the numerical richness of the blood, and that in this way it saves much time. The name chosen is not such as would satisfy a classical scholar, for it is constructed from the Greek word κύτος, a cell, and the Latin word *taxare*, to estimate. The calculation formerly carried out on paper with the aid of a pencil is done automatically. The apparatus can be employed for counting the red cells, leucocytes and lymphocytes, and the proportions of these amongst themselves. The apparatus costs £8, and is made by Aug. Matz and Co., Berlin, Schöneberg, Hauptstrasse, 53.

A UNIVERSAL GAZETTE OF MEDICAL LITERATURE.

Dr. Henry W. Cattell, of Philadelphia, referring to our annotation on the preliminary announcement of the *Bibliographische Monatsschrift* in THE LANCET of April 20th last, points out that, besides the Index Catalogue of the Surgeon-General's Library, there is a most valuable bibliographical monthly, the *Index Medicus*, the second series of which has been published for the past ten years by the Carnegie Institute of Washington. The first series of the *Index Medicus* consists of 21 volumes, which find a ready sale in the United States and Canada for £30.

FLORENCE NIGHTINGALE MEMORIAL ANNUITIE .

Dr. A. Ogier Ward, honorary secretary of the Trained Nurses' Annuity Fund, asks us to announce that applications are invited from disabled trained nurses for the above annuities, the allotment of which has been entrusted to this Fund. It is expected that there will be five annuities each of 10s. a week. All suitable applicants, whether successful or not, will be recorded, and if they are eligible they will be considered when a vacancy occurs amongst the ordinary annuities of the Fund. Applications for forms and regulations must be made by letter only to the honorary secretary, Trained Nurses' Annuity Fund, 73, Cheapside, London, E.C.

Dr. J. L. Whatley.—We have at present no information, and it is doubtful whether it would be worth while to spend much time on the subject since snuff-taking is now a rare practice. It certainly cannot compare with the almost universal habit of tobacco smoking. The quantity used, moreover, is very small compared with the consumption of tobacco. Nicotine would undoubtedly be absorbed from tobacco snuff, for ordinary water will abstract nicotine from tobacco, but the quantity absorbed would be infinitesimal.

"*Grey Hair.*"—The probability is that failure was due to not using nitrate of bismuth free from nitric acid as was enjoined. In acid solutions it is doubtful whether thio-urea would sulphuret the bismuth in the way described. Our correspondent is advised to consult a pharmaceutical chemist about the formula.

"*Hesitant*" must insist on medical advice being obtained; there is still risk of infection.

EURESOL PRO CAPILLIS.—In an analytical record last week we described the fatty basis of this preparation as eucerin. We should have said that eucerin, which is a pure wool fat, is an excellent adjunct to euresol, which is the mon-acetate of resorcin.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced for May and June:—

,, 16th–19th (Danzig).—German Association for Public Hygiene.
,, 21st (London).—Royal Society of Medicine. Opening of New Buildings by His Majesty the King.
,, 21st–23rd (Toronto).—Ontario Medical Association.
,, 22nd–30th (London, Chelsea).—Royal International Horticultural Exhibition.
,, 23rd (opens) (Philadelphia).—Twelfth International Congress on Navigation.
,, 23rd and 24th (Hanover).—Twenty-first Meeting of the German Otological Association.
,, 23rd–June 8th (London, Olympia).—Royal Naval and Military Tournament.
,, 24th and 25th (Hanover).—Nineteenth Meeting of the Union of German Laryngologists.
,, 25th (opens) (London, Shepherd's Bush).—Latin-British Exhibition.
,, 25th–27th (Paris).—International Musical Festival.
,, 26th–28th (Paris).—National Conference of the "Gouttes de Lait."
Whitsuntide (Portrush).—British Esperanto Congress.
May 27th–June 1st (London).—Eighteenth International Congress of Americanists.
,, 28th–30th (Berlin).—Meeting of German School Medical Officers.
,, 29th–31st (Berlin).—Fifteenth Session of the German Society for Gynæcology.
May to October (London, Earl's Court).—Shakespeare's England.
June 1st and 3rd (Atlantic City, N.J.).—American Medical Editors' Association.
,, 3rd and 4th (Atlantic City, N.J.).—Fourteenth Annual Meeting of the American Proctologic Society.
,, 3rd–10th (Salford).—Tuberculosis Exhibition.
,, 5th–7th (Manchester).—National Association for the Prevention of Consumption (Annual Conference).
,, 6th–12th (Bristol).—Health Conference and Exhibition.
,, 11th–14th (Caxton Hall, Westminster).—Second National Conference on the Prevention of Destitution.
,, 17th–29th (London, Olympia).—International Horse Show.
,, 21st and 22nd (Middelburg).—Dutch Congress for Public Health Regulations.
,, 23rd–27th (London, Royal Horticultural Hall).—The (Biennial) Health Conference and Exhibition.
,, 29th (Coventry).—Society of Medical Officers of Health (Annual Provincial Meeting).
,, (London).—Missionary Exhibition.
,, (Atlantic City, N.J.).—Annual Meeting of the American Medical Association.
,, (Birmingham).—Tuberculosis Exhibition.
,, (London, Science Museum, South Kensington).—Second Optical Convention.
July 2nd–5th (London).—Congress of the Universities of the Empire.
,, 2nd–6th (Doncaster).—Seventy-third Annual Show of the Royal Agricultural Society of England.
,, 4th–6th (Dublin).—Celebration of the Bicentenary of the School of Physic in Ireland (Medical School of Trinity College, Dublin).

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 15th, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 9	30·32	W.	...	121	74	58	59	62	Fine
,, 10	30·16	N.E.	...	115	72	58	56	61	Fine
,, 11	29·84	S.	...	128	81	55	60	65	Fine
,, 12	29·76	E.	...	108	68	57	59	64	Cloudy
,, 13	30·16	N.E.	0·17	114	64	50	49	53	Cloudy
,, 14	30·03	S.E.	..	121	72	52	52	61	Fine
,, 15	29·62	S.E.	0·02	112	69	56	55	59	Overcast

The following journals, magazines, &c., have been received:—American Journal of Obstetrics, Clinical Medicine, Yale Medical Journal, Revue de Médecine, Revue de Chirurgie, Journal of Obstetrics and Gynæcology, American Journal of Medical Sciences, Archives Générales de Médecine, Journal of State Medicine, British Journal of Children's Diseases, Middlesex Hospital Journal, Maryland Medical Journal, Local Government Review, Dublin Journal of Medical Science, China Medical Journal, St. Paul Medical Journal, &c.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Mr. H. S. Hele-Shaw: Theory of a New Mechanism for Varying the Volume of Discharge in the Rotating Slider Crank Form in the Chamber Crank Chain of Rouleaux.—Prof. R. A. Sampson: A New Treatment of Optical Aberrations.—Sir W. de W. Abney, K.C.B: On the Extinction of Light by an Illuminated Retina.—Mr. W. Wahl: Optical Measurements at High Pressures (communicated by Sir James Dewar).—Mr. T. R. Merton: The Changes in Certain Absorption Spectra in Different Solvents (communicated by Prof. J. M. Thomson).—Mr. W. C. Ball: On Changes in Absorption Spectra of "Didymium" Salts (communicated by Dr. V. H. Veley).—Dr. P. Phillips: The Viscosity of Carbon Dioxide (communicated by Prof. F. T. Trouton).

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY.—4.30 P.M., Clinical Cases will be shown by Dr. M. Dockrell, Dr. J. L. Bunch, Dr. K. Sibley, Dr. W. Griffith, and Dr. T. Galbraith. 5.15 P.M., Discussion on Recent Advances in the Study of Syphilis (opened by Dr. W. Griffith).

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY.—8.30 P.M., Dr. W. W. Westcott: Note on a Curious Result of Burning a New-born Child.—Mr. D. H. Pettit: An Inquiry into the Distinction between Accident and Disease under the Workmen's Compensation Act.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. H. G. Adamson: Clinique (Skin). 5.15 P.M., Lecture:—Dr. H. A. T. Fairbank: Appendicitis in Children.
TUESDAY.—4 P.M., Dr. J. Taylor: Clinique (Medical). 5.15 P.M., Lecture:—Mr. W. H. Battle: Ventral Hernia. (Second part.)
WEDNESDAY.—4 P.M., Mr. H. Lett: Clinique (Surgical) 5.15 P.M., Lecture:—Mr. F. H. Tod: Some Points on the Diagnosis and Treatment of Infective Thrombosis of the Lateral Sinus, Based on the Personal Experience of 75 Cases.
THURSDAY.—4 P.M., Dr. T. G. Stewart: Clinique (Medical). 5.15 P.M., Lecture:—Mr. W. A. Lane: The Operative Treatment of Fractures.
FRIDAY.—4 P.M., Mr. S. Stephenson: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Dr. S. Taylor: Hemiplegia.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 11 A.M., Mr. Retherington-Smith: Demonstration of Minor Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Low: Ankylostomiasis.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.
THURSDAY.—10 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. S. Taylor: Headaches.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. Bishop Harman: Diseases of the Eye. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).
TUESDAY.—Clinic; 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Gynæcological (Dr. A. H. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Special Demonstration:—Cases of Heart Disease with Polygraphic Demonstration.
WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks); X Rays (Mr. W. Steuart). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Special Demonstration:—Selected Surgical Cases.
FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.30 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
TUESDAY.—2 P.M., Operations. 3.15 P.M., Dr. R. Wells: Medicine. 2.15 P.M., Mr. R. Carling: Surgery. 4.15 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 3.15 P.M., Special Lecture:—Dr. R. Wells: Electro-cardiograms.
WEDNESDAY.—2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye 3.30 P.M., Special Lecture:—Mr. L. V. Cargill: Corneal Ulcers and their Treatment. 5 P.M., Surgical Demonstration: Mr. McGavin.
THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 4.30 P.M., Dr. W. Steuart: Radiography. 2.15 P.M., Special Lecture:—Dr. G. Rankin: Colic.
FRIDAY.—11 A.M., Dr. A. Davies: Pathological Demonstration. 2 P.M., Operations. 2.15 P.M., Sir J. Rose Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin
SATURDAY.—Out-patient Demonstration:—10 A.M., Surgical and Medical. 11 A.M., Eye.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY AND FRIDAY.—3.30 P.M., Clinical Lectures:—Dr. G. Stewart: Spinal Tumours.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4 P.M., Dr. Mackenzie: Demonstration of Cases.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Dr. W. Hampson: Electricity—Other Currents.

ANCOATS HOSPITAL, Manchester.

THURSDAY.—4.15 P.M., Dr. E. B. Leech: Insomnia. (Post-Graduate Clinic.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY.—4.30 P.M., Dr. Reynolds: Demonstration of a Case of Tumour of the Lung and of a Case of Paraplegia. (Post-Graduate Clinic.)
FRIDAY.—4.30 P.M., Mr. J. H. Ray: Prostatic Hypertrophy. (Post-Graduate Clinic.)

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (21st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London, (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.) Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (22nd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's 2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (23rd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M., Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.)., Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (25th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

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